MIXED FLOCK COUNTING

David Fairchild
ass. to Dr. Moynihan

June 8, 1960
I. Field Notes.

1. Notes for Chiriquí trip.

Middle Area: area where there were many Brown Caps. Same as the Bend in Road Area. Everything else seems to be clear.

2. Notes for Ecuador Trip.

useless.

3. Notes for Tinamou Ontogeny

everything seems to be clear.

II. Data Sheets.

1. There were 15 different counts.

Clearing

a. Oct. 26 thru Nov. 9, 1959--regular count, before the number system of reaction notation.

b. Nov. 10 thru Nov. 26, 1959--Clearing regular count, with the number system of reaction notation.

c. Nov. 27 thru Nov. 28--Clearing Behavioural Count in the tanager flocks.

d. Nov. 30 thru Dec. 1--Frijoles regular count.

e. Dec. 2 thru Dec. 15--Clearing Regular Count.


g. Dec. 21 thru Dec. 23--Guayacon Honeycreeper count.

h. Dec. 30 thru Jan. 19--Frijoles regular count.

i. March 23 thru March 29--Chiriquí regular count, various subareas.


also:

l. Dec. 9 thru Dec. 11--special count: "When DF followed Palms."

see summary envelope for Dec. 11.
m. m. Dec. 12 thru Dec. 18--special count: "When DF followed Palms," see summary envelope for Dec. 18.

n. Nov. 25--Naval Reservation, Gambas, count.

III. Terminology.

As a rule, one term came to be used for each idea in the counting, but there are many exceptions. Some of the ideas have several terms or variations on the term evolved through usage or changed intentionally.

1. Mixed Flocks.

A mixed flock is two or more species in an association either in the same actual tree or in the same volume composed roughly of a sphere fifty feet in diameter, in cases where there are no natural foliage breaks.

2. Nucleus of a Flock.

An old term, originally used to mean a species which was joined by the other species of a given mixed flock. Later more definite observation changed this term to mean one species joining another to form a mixed flock when the original species was by itself previously, or when one species joins another species within ten feet. Notation, e.g.: "1. Blue j. Plain—a reaction which was summarized in: "nucleus of flocks" summaries, "joining" summaries, and "following and/or joining" summaries.

2. Group Leader

A now completely obsolete term used only when the first bird in a flight of a mixed flock was identified. This term is virtually replaced by the "following" term or reaction, once the observer becomes proficient at rapid identification. Notation, e.g.: 2. Gold.

3. Following

When one species actually follows another within thirty seconds in flight, either from tree to tree or from branch to branch in the same tree—provided the individuals do not appear aggressive to one another. Notation, e.g.: 3. Blue f. Plain.

4. Not Following

When one species leaves a mixed flock conspicuously, without being followed by any other species. Distinguished from "leaving" by the fact that the Bird flies giving some call notes. Notation, e.g.: 4. Palm.

5. Supplanting

When one species takes the perch of, or lands close to and causes the
escape of, another species, in an obviously hostile manner. Notation, e.g.: 5. Green → RIH.


When one species leaves a mixed flock inconspicuously, i.e., completely silently—without being followed by any other species. Notation, e.g.: 6. Plain.

7. Intraspecific Contact Fight.

Notation, e.g.: 7. Bananaquit.

8. Abbreviations.

mitrosph-Mitosphingus sp.
or. bill spar.-Orange Billed Sparrow
Buffthr.-Buff-throated Saltator
BTS- " " "
Black Cap S.-Black-capped Saltator
ECS- " " "
RLH-Red-legged Honeycreeper
YLT-Yellow-legged Blue Honeycreeper
Bdsc-Blue Dacnis
Sdsc-Scarlet-thighed Dacnis
YTO-Yellow-tailed Oriole
Y.T.O. " " "
BTO-Black-tailed Oriole
B.T.O. " " "
Variab.-Variable Seedeater
VS- " "
Wltan-White-lined Tanager
BB-Blue-black Grassquit
BBGrass. " "
Ban.-Bananaquit
YW-Yellow Warbler
F.V.U.-Fulvous-venteè Euphonia
Mask-Masked Tityra
CSW-Chestnut-sided Warbler
YB-Yellow-billed Seedeater
IV. Field Techniques

1. Clearing Regular Count
   Regular Count
   Old Style Count

   This type of count was made by walking around the clearing from the end of the dock to behind the library and over to ZMA, looking for flocks mainly by eye, also by ear, almost never by actual scanning with glasses. When every bird of a given flock had been counted, and the reactions that had taken place during the counting were notated, I moved on to another area and looked for other flocks. No longer than ten to fifteen minutes was spent at one flock—at the most—before moving on. I never counted the same flock more than once within a half hour.

2. Clearing Behavioral Count
   Behavioral Count
   New Style Count

   This count was made in the same way as the Regular count, only much more time was spent on each mixed flock in order to observe as many reactions as possible. Occasionally an entire hour was spent with one mixed flock.

3. Guayacon Honeycreeper Count

   This was made solely in two trees in the clearing, one of which has been chopped down. I sat and watched the flock in it steadily for four hours in the morning, recounting the contents not more than every fifteen to twenty minutes. Reactions were observed and notated continually, however.

4. Miscellaneous "Regular Counts"

   These counts were done as closely similar to Clearing Regular Counts as the conditions permitted, i.e., time spent on each flock, time between re-counts, etc.

5. Seedeater Count

   This count was made, as is described in the field notes in the envelope, in one small location, where I remained for the entire period of observation. Circulation proved unsuccessful, as the species were too shy and reacted to me at less than seventy feet. Models were always used.
TABLE 1.


Hours of observation: 42 1/2. *
Average no. of individuals seen per hour: 8.94.
Average no. of individuals seen in mixed flocks per hour: 5.41.
Individuals seen in mixed flocks as % of relevant total no. of individuals seen: 63.89 %.

Average no. of mixed flocks seen per hour: 0.94
Average no. of birds, organized mixed flocks seen per hour: 0.61
Average no. of individuals per mixed flock: 5.75.
Largest no. of individuals in one flock: 15.
Average no. of species per mixed flock (based on 30 flocks in this case): 3.53.
Largest no. of species in one flock: 8.
**TABLE 2.**


<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours of observation:</td>
<td>23 1/2</td>
</tr>
<tr>
<td>Average no. of individuals seen per hour:</td>
<td>4.85</td>
</tr>
<tr>
<td>Average no. of individuals seen in mixed flocks per hour:</td>
<td>3.44</td>
</tr>
<tr>
<td>Individuals seen in mixed flocks as % of relevant total no. of individuals seen:</td>
<td>43.52%</td>
</tr>
<tr>
<td>Average no. of mixed flocks seen per hour:</td>
<td>0.94</td>
</tr>
<tr>
<td>Average no. of birds, organized mixed flocks seen per hour:</td>
<td>0.46</td>
</tr>
<tr>
<td>Average no. of individuals per mixed flock:</td>
<td>6.14</td>
</tr>
<tr>
<td>Largest no. of individuals in one flock:</td>
<td>20</td>
</tr>
<tr>
<td>Average no. of species per mixed flock:</td>
<td>3.91</td>
</tr>
<tr>
<td>Largest no. of species in one flock:</td>
<td>18</td>
</tr>
</tbody>
</table>
### Table 3.

**Mixed Flocks below Linauré, Northern Bolivia, October – November, 1963.**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours of observation</td>
<td>19 3/4</td>
</tr>
<tr>
<td>Average no. of individuals seen per hour</td>
<td>7.90</td>
</tr>
<tr>
<td>Average no. of individuals seen in mixed flocks per hour</td>
<td>1.84</td>
</tr>
<tr>
<td>Individuals seen in mixed flocks as % of relevant total no. of individuals seen</td>
<td>23.72%</td>
</tr>
<tr>
<td>Average no. of mixed flocks seen per hour</td>
<td>0.51</td>
</tr>
<tr>
<td>Average no. of high organism mixed flocks seen per hour</td>
<td>0.05</td>
</tr>
<tr>
<td>Average no. of individuals per mixed flock</td>
<td>3.70</td>
</tr>
<tr>
<td>Largest no. of individuals in one flock</td>
<td>8</td>
</tr>
<tr>
<td>Average no. of species per mixed flock</td>
<td>2.50</td>
</tr>
<tr>
<td>Largest no. of species in one flock</td>
<td>5</td>
</tr>
</tbody>
</table>
TABLE 4.

Mixed Flocks below Andarui, Northern Bolivia, February-March, 1964.

Hours of observation: 10 1/4.
Average no. of individuals seen per hour: 10.34.
Average no. of individuals seen in mixed flocks per hour: 0.44.
Individuals seen in mixed flocks as % of relevant total no. of individuals seen: 6.26 %.
Average no. of mixed flocks seen per hour: 1.14.
Average no. of highly organized mixed flocks seen per hour: 0.48.
Average no. of individuals per mixed flock: 5.50.
Largest no. of individuals in one flock: 11.
Average no. of species per mixed flock: 2.92.
Largest no. of species in one flock: 5.
TABLE 5.

Mixed Flocks at the Top and on the Eastern and Southeastern Slopes of Machu Picchu.
(Most data from June, 1944; a few counts from February, 1944).

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours of observation</td>
<td>35</td>
</tr>
<tr>
<td>Average no. of individuals seen per hour</td>
<td>9.43</td>
</tr>
<tr>
<td>Average no. of individuals seen in mixed flocks per hour</td>
<td>7.83</td>
</tr>
<tr>
<td>Individuals seen in mixed flocks as % of subsequent total no. of individuals</td>
<td>83.03%</td>
</tr>
<tr>
<td>Average no. of mixed flocks seen per hour</td>
<td>0.94</td>
</tr>
<tr>
<td>Average no. of bright orange- and mixed flocks seen per hour</td>
<td>0.63</td>
</tr>
<tr>
<td>Average no. of individuals per mixed flock</td>
<td>8.04</td>
</tr>
<tr>
<td>Largest no. of individuals in one flock</td>
<td>24</td>
</tr>
<tr>
<td>Average no. of species per mixed flock</td>
<td>5.24</td>
</tr>
<tr>
<td>Largest no. of species in one flock</td>
<td>20</td>
</tr>
</tbody>
</table>
### Table 6.

**Mourl Flocks on the Western and Northwestern Slopes of Machu Picchu, February, 1964.**

- Hours of observation: 27½.
- Average no. of individuals seen per hour: 3.13.
- Average no. of individuals seen in mixed flocks per hour: 0.73.
- Individuals seen in mixed flocks as % of total no. of individuals seen: 23.26%.
- Average no. of mixed flocks seen per hour: 0.22.
- Average no. of breasted, organized mixed flocks seen per hour: 0.11.
- Average no. of individuals seen per mixed flock: 3.33.
- Largest no. of individuals in one flock: 4.
- Average no. of species per mixed flock: 2.50.
- Largest no. of species in one flock: 4.
TABLE 7.

Mixed Flocks on the Western and Northwestern slopes of Machu Picchu, June, 1906.

Hours of observation: 21.
Average no. of individuals seen per hour: 4.38.
Average no. of individuals seen in mixed flocks per hour: 1.90
Individuals seen in mixed flocks as % of relevant total no. of individuals seen: 41.30 %
Average no. of mixed flocks seen per hour: 0.29
Average no. of loosely organized mixed flocks seen per hour: 0.10
Average no. of individuals seen per mixed flock: 6.33.
Largest no. of individuals in one flock: 8.
Average no. of species per mixed flock: 4.14.
Largest no. of species in one flock: 6.
TABLE 8.


Hours of observation: 25.
Average no. of individuals seen per hour: 13.00
Average no. of individuals seen in mixed flocks per hour: 9.44
Individuals seen in mixed flocks as % of total no. of individuals seen: 72.62%.
Average no. of mixed flocks seen per hour: 1.04.
Average no. of highly organized mixed flocks seen per hour: 0.64
Average no. of individuals seen per mixed flock: 9.08
Largest no. of individuals in one flock: 23.
Average no. of species per mixed flock: 3.44
Largest no. of species in one flock: 14.


<table>
<thead>
<tr>
<th>Hours of Observation:</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average no. of individuals seen per hour:</td>
<td>6.40</td>
</tr>
<tr>
<td>Average no. of individuals seen in mixed flocks per hour:</td>
<td>1.50</td>
</tr>
<tr>
<td>Individuals seen in mixed flocks as % of total no. of individuals seen:</td>
<td>23.44</td>
</tr>
<tr>
<td>Average no. of mixed flocks seen per hour:</td>
<td>0.40</td>
</tr>
<tr>
<td>Average no. of flocks organized mixed flocks seen per hour:</td>
<td>0.10</td>
</tr>
<tr>
<td>Average no. of individuals seen per mixed flock:</td>
<td>3.43</td>
</tr>
<tr>
<td>Largest no. of individuals in one flock:</td>
<td>7</td>
</tr>
<tr>
<td>Average no. of species per mixed flock:</td>
<td>2.75</td>
</tr>
<tr>
<td>Largest no. of species in one flock:</td>
<td>4</td>
</tr>
</tbody>
</table>
TABLE 10.

Birds of the Pulau Area, February, 1964

Hours of observation: 17 1/2
Average no. of individuals seen per hour: 4.51
Average no. of individuals seen in flocks per hour: 0
**TABLE II.**

Mixed Flocks near Chachapoyas February 1964

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours of observation</td>
<td>13</td>
</tr>
<tr>
<td>Average no. of individuals seen per hour</td>
<td>5.38</td>
</tr>
<tr>
<td>Average no. of individuals seen in mixed flocks per hour</td>
<td>0.67</td>
</tr>
<tr>
<td>Individuals seen in mixed flocks as % of total no of individuals seen</td>
<td>12.86%</td>
</tr>
<tr>
<td>Average no. of mixed flocks seen per hour</td>
<td>0.23</td>
</tr>
<tr>
<td>Average no. of highly organized mixed flocks seen per hour</td>
<td>0</td>
</tr>
<tr>
<td>Average no. of individuals seen per mixed flock</td>
<td>3</td>
</tr>
<tr>
<td>Largest no. of individuals in one flock</td>
<td>5</td>
</tr>
<tr>
<td>Average no. of species per mixed flock</td>
<td>2.33</td>
</tr>
<tr>
<td>Largest no. of species in one flock</td>
<td>3</td>
</tr>
<tr>
<td>Description</td>
<td>Value</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Hours of observation</td>
<td>14</td>
</tr>
<tr>
<td>Average no. of individuals seen per hour</td>
<td>2.41</td>
</tr>
<tr>
<td>Average no. of individuals seen in mixed flocks per hour</td>
<td>3.94</td>
</tr>
<tr>
<td>Individuals seen in mixed flocks as % of total no. of individuals seen</td>
<td>61.47</td>
</tr>
<tr>
<td>Average no. of mixed flocks seen per hour</td>
<td>0.76</td>
</tr>
<tr>
<td>Average no. of highly organized mixed flocks seen per hour</td>
<td>0.47</td>
</tr>
<tr>
<td>Average no. of individuals seen per mixed flock</td>
<td>5.15</td>
</tr>
<tr>
<td>Largest no. of individuals in one flock</td>
<td>13</td>
</tr>
<tr>
<td>Average no. of species per mixed flock</td>
<td>3.62</td>
</tr>
<tr>
<td>Largest no. of species in one flock</td>
<td>8</td>
</tr>
</tbody>
</table>

Table 12: Mixed flocks near Cutervo, June 1966
TABLE 13

Central Ecuador, All Areas Apparently Suitable for Flocks, 1964 and 1966

Hours of observation: 111
Average no. of individuals seen per hour: 11.96
Average no. of individuals seen in mixed flocks per hour: 4.35
Individuals seen in mixed flocks as % of total no. of individuals seen: 36.34%
Average no. of mixed flocks seen per hour: 0.80
Average no. of highly organized mixed flocks seen per hour: 0.31
Average no. of individuals seen per mixed flock: 5.43
Largest no. of individuals in one flock: 17
Average no. of species per mixed flock: 3.38
Largest no. of species in one flock: 10
TABLE 14

Central Ecuador: Areas in which Highly Organized Flocks Were Seen, 1944 and 1945.

Hours of observation: 62 34
Average no. of individuals seen per hour: 14.49
Average no. of individuals seen in mixed flocks per hour: 4.96
Individuals seen in mixed flocks as % of total no. of individuals seen: 48.04%
Average no. of mixed flocks seen per hour: 1.16
Average no. of highly organized mixed flocks seen per hour: 0.54
Average no. of individuals seen per mixed flock: 5.99
Largest no. of individuals in one flock: 17
Average no. of species per flock: 3.66
Largest no. of species in one flock: 10
**Table 15**


<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours of observation</td>
<td>48 1/4</td>
</tr>
<tr>
<td>Average no. of individuals seen per hour</td>
<td>8.67</td>
</tr>
<tr>
<td>Average no. of individuals seen in mixed flocks per hour</td>
<td>0.95</td>
</tr>
<tr>
<td>Individuals seen in mixed flocks as % of total no. of individuals seen</td>
<td>12.33%</td>
</tr>
<tr>
<td>Average no. of mixed flocks seen per hour</td>
<td>0.33</td>
</tr>
<tr>
<td>Average no. of birds, organized mixed flocks seen per hour</td>
<td>0</td>
</tr>
<tr>
<td>Average no. of individuals seen per mixed flock</td>
<td>2.88</td>
</tr>
<tr>
<td>Largest no. of individuals in one flock</td>
<td>4</td>
</tr>
<tr>
<td>Average no. of species per flock</td>
<td>2.13</td>
</tr>
<tr>
<td>Largest no. of species in one flock</td>
<td>3</td>
</tr>
</tbody>
</table>
**TABLE 16**

Mixed Flocks Along Road to Santo Domingo, ca. 2957-2833 m., March, 1946

- **Hours of observation**: 14
- **Average no. of individuals seen per hour**: 17.21
- **Average no. of individuals seen in mixed flocks per hour**: 8.82
- **Individuals seen in mixed flocks as % of total no. of individuals seen**: 51.45%
- **Average no. of mixed flocks seen per hour**: 1.30
- **Average no. of highly organized mixed flocks seen per hour**: 0.64
- **Average no. of individuals seen per mixed flock**: 3.70
- **Largest no. of individuals in one flock**: 15
- **Average no. of species per mixed flock**: 3.47
- **Largest no. of species in one flock**: 10
### TABLE 17

**Mixed Flocks Along Road to Santo Domingo, ca. 2805-2683m, March, 1966.**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours of observation</td>
<td>14 1/2</td>
</tr>
<tr>
<td>Average no. of individuals seen per hour</td>
<td>15.03</td>
</tr>
<tr>
<td>Average no. of individuals seen in mixed flocks per hour</td>
<td>8.62</td>
</tr>
<tr>
<td>Individuals seen in mixed flocks as % of total no. of individuals seen</td>
<td>54.34%</td>
</tr>
<tr>
<td>Average no. of mixed flocks seen per hour</td>
<td>1.31</td>
</tr>
<tr>
<td>Average no. of highly organized mixed flocks seen per hour</td>
<td>0.41</td>
</tr>
<tr>
<td>Average no. of individuals seen per mixed flock</td>
<td>4.38</td>
</tr>
<tr>
<td>Largest no. of individuals in one flock</td>
<td>17</td>
</tr>
<tr>
<td>Average no. of species per mixed flock</td>
<td>4.0</td>
</tr>
<tr>
<td>Largest no. of species in one flock</td>
<td>10</td>
</tr>
</tbody>
</table>
**TABLE 18**

*Mixed Flocks at Quassa, September, 1962*

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours of observation:</td>
<td>10:34</td>
</tr>
<tr>
<td>Average no. of individuals seen per hour:</td>
<td>0.79</td>
</tr>
<tr>
<td>Average no. of individuals seen in mixed flocks per hour:</td>
<td>3.26</td>
</tr>
<tr>
<td>Individuals seen in mixed flocks as % of total no. of individuals seen:</td>
<td>44.95%</td>
</tr>
<tr>
<td>Average no. of mixed flocks seen per hour:</td>
<td>0.34</td>
</tr>
<tr>
<td>Average no. of highly organized mixed flocks seen per hour:</td>
<td>0.28</td>
</tr>
<tr>
<td>Average no. of individuals seen per mixed flock:</td>
<td>6.45</td>
</tr>
<tr>
<td>Largest no. of individuals in one flock:</td>
<td>10</td>
</tr>
<tr>
<td>Average no. of species per mixed flock:</td>
<td>5.50</td>
</tr>
<tr>
<td>Largest no. of species in one flock:</td>
<td>9</td>
</tr>
<tr>
<td>TABLE 19</td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td></td>
</tr>
</tbody>
</table>

**Mixed Fleets at Quasca, April, 1963**

- **Hours of observation:** 13½
- **Average no. of individuals seen per hour:** 12.81
- **Average no. of individuals seen in mixed flocks per hour:** 4.81
- **Individuals seen in mixed flocks as % of total no. of individuals seen:** 34.51%
- **Average no. of mixed flocks seen per hour:** 0.45
- **Average no. of highly organized mixed flocks seen per hour:** 0.30
- **Average no. of individuals seen per mixed flock:** 6.30
- **Largest no. of individuals in one flock:** 12
- **Average no. of species per mixed flock:** 4.10
- **Largest no. of species in one flock:** 6
TABLE 20

Mixed Flocks at Guasca, August, 1965

Hours of observation: 4 1/4
Average no. of individuals seen per hour: 10.48
Average no. of individuals seen in mixed flocks per hour: 2.04
Individuals seen in mixed flocks as % of total no. of individuals seen: 19.74 %
Average no. of mixed flocks seen per hour: 0.41
Average no. of highly organized mixed flocks seen per hour: 0.14
Average no. of individuals seen per mixed flock: 5
Largest no. of individuals in one flock: 8
Average no. of species per mixed flock: 4.33
Largest no. of species in one flock: 7
TABLE 21

Mixed Flocks on Mountains above Bogotá, April, 1965.

Hours of observation: 21 3/4
Average no. of individuals seen per hour: 9.22
Average no. of individuals seen in mixed flocks per hour: 2.25
Individuals seen in mixed flocks as % of total no. of individuals seen: 24.26%

Average no. of mixed flocks seen per hour: 0.59
Average no. of highly organized mixed flocks seen per hour: 0.14
Average no. of individuals in one flock: 3.77
Largest no. of individuals in one flock: 4
Average no. of species per mixed flock: 2.74
Largest no. of species in one flock: 5
<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours of observation</td>
<td>11 1/2</td>
</tr>
<tr>
<td>Average no. of individuals seen per hour</td>
<td>12</td>
</tr>
<tr>
<td>Average no. of individuals seen in mixed flocks per hour</td>
<td>4.52</td>
</tr>
<tr>
<td>Individuals seen in mixed flocks as % of total no. of individuals seen</td>
<td>33.94%</td>
</tr>
<tr>
<td>Average no. of mixed flocks seen per hour</td>
<td>0.87</td>
</tr>
<tr>
<td>Average no. of highly organized mixed flocks seen per hour</td>
<td>0.52</td>
</tr>
<tr>
<td>Average no. of individuals in one flock</td>
<td>5.10</td>
</tr>
<tr>
<td>Largest no. of individuals in one flock</td>
<td>12</td>
</tr>
<tr>
<td>Average no. of species per mixed flock</td>
<td>3.30</td>
</tr>
<tr>
<td>Largest no. of species in one flock</td>
<td>8</td>
</tr>
</tbody>
</table>
TABLE 23

Mixed Flocks at Agua Bonita, April, 1945

Hours of observation: 8.4
Average no. of individuals seen per hour: 8.24
Average no. of individuals seen in mixed flocks per hour: 4.97
Individuals seen in mixed flocks as % of total no. of individuals seen: 68.29%
Average no. of mixed flocks seen per hour: 0.36
Average no. of high, organic mixed flocks seen per hour: 0.36
Average no. of individuals in one flock: 13.64
Largest no. of individuals in one flock: 26
Average no. of species per mixed flock: 8.67
Largest no. of species in one flock: 15
**Table 24**

*Mixed Flocks at Aguja Bonita, August 1965*

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours of observation</td>
<td>13</td>
</tr>
<tr>
<td>Average no. of individuals seen per hour</td>
<td>13.23</td>
</tr>
<tr>
<td>Average no. of individuals seen in mixed flocks per hour</td>
<td>9.31</td>
</tr>
<tr>
<td>Individuals seen in mixed flocks as % of total no. of individuals seen</td>
<td>78.35%</td>
</tr>
<tr>
<td>Average no. of mixed flocks seen per hour</td>
<td>1.23</td>
</tr>
<tr>
<td>Average no. of highly organized flocks seen per hour</td>
<td>0.85</td>
</tr>
<tr>
<td>Average no. of individuals in one flock</td>
<td>4.56</td>
</tr>
<tr>
<td>Largest no. of individuals in one flock</td>
<td>19</td>
</tr>
<tr>
<td>Average no. of species per mixed flock</td>
<td>4.50</td>
</tr>
<tr>
<td>Largest no. of species in one flock</td>
<td>11</td>
</tr>
</tbody>
</table>
**TABLE 25**

**Mixed Flocks on Rico Espírito, April, 1965.**

<table>
<thead>
<tr>
<th>Hour of Observation</th>
<th>23</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average no. of individuals seen per hour</td>
<td>9.48</td>
</tr>
<tr>
<td>Average no. of individuals seen in mixed flocks per hour</td>
<td>4.02</td>
</tr>
<tr>
<td>Individuals seen in mixed flocks as % of total no. of individuals seen</td>
<td>43.12%</td>
</tr>
<tr>
<td>Average no. of mixed flocks seen per hour</td>
<td>0.14</td>
</tr>
<tr>
<td>Average no. of highly organized mixed flocks seen per hour</td>
<td>0.35</td>
</tr>
<tr>
<td>Average no. of individuals in one flock</td>
<td>5.33</td>
</tr>
<tr>
<td>Largest no. of individuals in one flock</td>
<td>16</td>
</tr>
<tr>
<td>Average no. of species per mixed flock</td>
<td>4.06</td>
</tr>
<tr>
<td>Largest no. of species in one flock</td>
<td>11</td>
</tr>
</tbody>
</table>
### TABLE 26

**Mixed Flocks on Pier Esp一是, August-September, 1965**

- **Hours of observation:** 14 1/2
- **Average no. of individuals seen per hour:** 9.17
- **Average no. of individuals seen in mixed flocks per hour:** 7.24
- **Individuals seen in mixed flocks as % of total no. of individuals seen:** 48.95%
- **Average no. of mixed flocks seen per hour:** 0.46
- **Average no. of highly organized mixed flocks seen per hour:** 0.46
- **Average no. of individuals in one flock:** 9.53
- **Largest no. of individuals in one flock:** 22
- **Average no. of species per mixed flock:** 3.71
- **Largest no. of species in one flock:** 15
**TABLE 27**

**Mixed Flocks at La Hoja, April, 1965**

- Hours of observation: 9 3/4
- Average no. of individuals seen per hour: 8.31
- Average no. of individuals seen in mixed flocks per hour: 2.24
- Individuals seen in mixed flocks as % of total no. of individuals seen: 34.57%
- Average no. of mixed flocks seen per hour: 0.61
- Average no. of highly organized mixed flocks seen per hour: 0.31
- Average no. of individuals in one flock: 4.47
- Largest no. of individuals in one flock: 6
- Average no. of species per mixed flock: 2
- Largest no. of species in one flock: 2
TABLE 28

Mixed Flocks at La Negra, August - September, 1965

Hours of observation: 11 1/2
Average no. of individuals seen per hour: 13.04
Average no. of individuals seen in mixed flocks per hour: 5.71
Individuals seen in mixed flocks as % of total no. of individuals seen: 43.34 %
Average no. of mixed flocks seen per hour: 0.94
Average no. of birds/organism mixed flocks seen per hour: 0.35
Average no. of individuals in one flock: 6.18
Largest no. of individuals in one flock: 15
Average no. of species per mixed flock: 3.75
Largest no. of species in one flock: 8
TABLE 29

Mixed Flocks at Zumbador, September 1865

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours of observation</td>
<td>8 1/4</td>
</tr>
<tr>
<td>Average no. of individuals seen per hour</td>
<td>18.06</td>
</tr>
<tr>
<td>Average no. of individuals seen in mixed flocks per hour</td>
<td>15.03</td>
</tr>
<tr>
<td>Individuals seen in mixed flocks as % of total no. of individuals seen</td>
<td>83.22%</td>
</tr>
<tr>
<td>Average no. of mixed flocks seen per hour</td>
<td>1.07</td>
</tr>
<tr>
<td>Average no. of large, organized mixed flocks seen per hour</td>
<td>1.07</td>
</tr>
<tr>
<td>Average no. of individuals in one flock</td>
<td>13.48</td>
</tr>
<tr>
<td>Largest no. of individuals in one flock</td>
<td>22</td>
</tr>
<tr>
<td>Average no. of species per mixed flocks</td>
<td>7.67</td>
</tr>
<tr>
<td>Largest no. of species in one flock</td>
<td>11</td>
</tr>
<tr>
<td>TABLE 30</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td></td>
</tr>
</tbody>
</table>

Mixed Flocks at San Lorenzo, August, 1944

Hours of observation: 33 \( \frac{3}{4} \)
Average no. of individuals seen per hour: 2.36
Average no. of individuals seen in mixed flocks per hour: 6.49
Individuals seen in mixed flocks as % of total no. of individuals seen: 69.08%

Average no. of mixed flocks seen per hour: 0.83
Average no. of species in mixed flocks seen per hour: 0.44
Average no. of individuals in one flock: 4.43
Largest no. of individuals in one flock: 32 *
Average no. of species in one flock: 4.43
Largest no. of species in one flock: 14

* This flock included a particularly large group of individuals of Chlorostomus cyannea.
<table>
<thead>
<tr>
<th><strong>TABLE 31</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed Flocks, Top and West (Papayaín) side, Purace, May 1965</td>
</tr>
</tbody>
</table>

**Hours of observation:** 49 3/4

- **Average no. of individuals seen per hour:** 8.56
- **Average no. of individuals seen in mixed flocks per hour:** 4.02
- **Individuals seen in mixed flocks as % of total no. of individuals seen:** 46.75%

- **Average no. of mixed flocks seen per hour:** 0.68
- **Average no. of highly organized mixed flocks seen per hour:** 0.42
- **Average no. of individuals in one flock:** 5.88
- **Largest no. of individuals in one flock:** 18
- **Average no. of species per mixed flock:** 3.91
- **Largest no. of species in one flock:** 10
**Table 30**

Mixture, Flocks, Top and West (Popayán) side, Piracic, August, 1945.

- Hours of observation: 4
- Average no. of individuals seen per hour: 9.41
- Average no. of individuals seen in mixed flocks per hour: 4.14
- Individuals seen in mixed flocks as % of total no. of individuals seen: 43.53%
- Average no. of mixed flocks seen per hour: 0.54
- Average no. of highly organized flocks seen per hour: 0.54
- Average no. of individuals in one flock: 12.50
- Largest no. of individuals in one flock: 22
- Average no. of species per mixed flock: 8.25
- Largest no. of species in one flock: 13
**TABLE 33**


<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours of observation</td>
<td>19:34</td>
</tr>
<tr>
<td>Average no. of individuals seen per hour</td>
<td>11.90</td>
</tr>
<tr>
<td>Average no. of individuals seen in mixed flocks per hour</td>
<td>10.129</td>
</tr>
<tr>
<td>Individuals seen in mixed flocks as % total no. of individuals seen</td>
<td>46.64%</td>
</tr>
<tr>
<td>Average no. of mixed flocks seen per hour</td>
<td>0.91</td>
</tr>
<tr>
<td>Average no. of birds in given mixed flock seen per hour</td>
<td>0.81</td>
</tr>
<tr>
<td>Average no. of individuals in one flock</td>
<td>11.83</td>
</tr>
<tr>
<td>Largest no. of individuals in one flock</td>
<td>28</td>
</tr>
<tr>
<td>Average no. of species per mixed flock</td>
<td>4.22</td>
</tr>
<tr>
<td>Largest no. of species in one flock</td>
<td>16</td>
</tr>
</tbody>
</table>
**TABLE 34**

*Mixed Flocks, East (Moxcopán) Side, Peruca, August, 1965*

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours of observation:</td>
<td>13</td>
</tr>
<tr>
<td>Average no. of individuals seen per hour:</td>
<td>14.44</td>
</tr>
<tr>
<td>Average no. of individuals seen in mixed flocks per hour:</td>
<td>16.38</td>
</tr>
<tr>
<td>Individuals seen in mixed flocks as % total no. of individuals seen:</td>
<td>92.21%</td>
</tr>
<tr>
<td>Average no. of mixed flocks seen per hour:</td>
<td>1.08</td>
</tr>
<tr>
<td>Average no. of bright, organized mixed flocks seen per hour:</td>
<td>1.08</td>
</tr>
<tr>
<td>Average no. of individuals in one flock:</td>
<td>15.215</td>
</tr>
<tr>
<td>Largest no. of individuals in one flock:</td>
<td>35</td>
</tr>
<tr>
<td>Average no. of species per mixed flock:</td>
<td>9.36</td>
</tr>
<tr>
<td>Largest no. of species in one flock:</td>
<td>26</td>
</tr>
</tbody>
</table>
# Table 35

**Mixed Flocks in the Northern Part of the Central Cordillera of Colombia, July 1965**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours of observation</td>
<td>23 1/2</td>
</tr>
<tr>
<td>Average no. of individuals seen per hour</td>
<td>8.36</td>
</tr>
<tr>
<td>Average no. of individuals seen in mixed flocks per hour</td>
<td>4.85</td>
</tr>
<tr>
<td>Individuals seen in mixed flocks as % of total no. of individuals seen</td>
<td>58.16 %</td>
</tr>
<tr>
<td>Average no. of mixed flocks seen per hour</td>
<td>0.64</td>
</tr>
<tr>
<td>Average no. of highly organized mixed flocks seen per hour</td>
<td>0.55</td>
</tr>
<tr>
<td>Average no. of individuals in one flock</td>
<td>4.60</td>
</tr>
<tr>
<td>Largest no. of individuals in one flock</td>
<td>20</td>
</tr>
<tr>
<td>Average no. of species per mixed flock</td>
<td>3.0</td>
</tr>
<tr>
<td>Largest no. of species in one flock</td>
<td>16</td>
</tr>
</tbody>
</table>
TABLE 36

Mixed Flocks on Paramoque in the Western Cordillera of Colombia, May 1965

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours of observation</td>
<td>29.75</td>
</tr>
<tr>
<td>Average no. of individuals seen per hour</td>
<td>8.85</td>
</tr>
<tr>
<td>Average no. of individuals seen in mixed flocks per hour</td>
<td>5.47</td>
</tr>
<tr>
<td>Individuals seen in mixed flocks as % total no. of individuals seen</td>
<td>21.78%</td>
</tr>
<tr>
<td>Average no. of mixed flocks seen per hour</td>
<td>0.42</td>
</tr>
<tr>
<td>Average no. of highly organized mixed flocks seen per hour</td>
<td>0.48</td>
</tr>
<tr>
<td>Average no. of individuals in one flock</td>
<td>7.62</td>
</tr>
<tr>
<td>Largest no. of individuals in one flock</td>
<td>18</td>
</tr>
<tr>
<td>Average no. of species per mixed flock</td>
<td>4.54</td>
</tr>
<tr>
<td>Largest no. of species in one flock</td>
<td>13</td>
</tr>
</tbody>
</table>
TABLE 34

Mixed Flocks on Munchique in the Western Cordillera of Colombia, August 1965

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours of Observation</td>
<td>18</td>
</tr>
<tr>
<td>Average no. of individuals seen per hour</td>
<td>10.06</td>
</tr>
<tr>
<td>Average no. of individuals seen in mixed flocks per hour</td>
<td>8.56</td>
</tr>
<tr>
<td>Individuals seen in mixed flocks as % total no. of individuals</td>
<td>83.08%</td>
</tr>
<tr>
<td>Average no. of mixed flocks seen per hour</td>
<td>0.61</td>
</tr>
<tr>
<td>Average no. of highly organized mixed flocks seen per hour</td>
<td>0.36</td>
</tr>
<tr>
<td>Average no. of individuals in one flock</td>
<td>14.0</td>
</tr>
<tr>
<td>Largest no. of individuals in one flock</td>
<td>37</td>
</tr>
<tr>
<td>Average no. of species per mixed flock</td>
<td>7.82</td>
</tr>
<tr>
<td>Largest no. of species in one flock</td>
<td>19</td>
</tr>
<tr>
<td>Description</td>
<td>Value</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Hours of observation:</td>
<td>9.74</td>
</tr>
<tr>
<td>Average no. of individuals seen per hour:</td>
<td>8.32</td>
</tr>
<tr>
<td>Average no. of individuals seen in mixed flocks per hour:</td>
<td>5.04</td>
</tr>
<tr>
<td>Individuals seen in mixed flocks as % total no. of individuals seen:</td>
<td>61.04%</td>
</tr>
<tr>
<td>Average no. of mixed flocks seen per hour:</td>
<td>0.54</td>
</tr>
<tr>
<td>Average no. of species in mixed flocks seen per hour:</td>
<td>0.32</td>
</tr>
<tr>
<td>Average no. of individuals in one flock:</td>
<td>9.40</td>
</tr>
<tr>
<td>Largest no. of individuals in one flock:</td>
<td>20</td>
</tr>
<tr>
<td>Average no. of species per mixed flock:</td>
<td>5.0</td>
</tr>
<tr>
<td>Largest no. of species in one flock:</td>
<td>10</td>
</tr>
<tr>
<td>Description</td>
<td>Value</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Hours of observation</td>
<td>20 1/2</td>
</tr>
<tr>
<td>Average no. of individuals seen per hour</td>
<td>8.15</td>
</tr>
<tr>
<td>Average no. of individuals seen in mixed flocks per hour</td>
<td>6.88</td>
</tr>
<tr>
<td>Individuals seen in mixed flocks as % total no. of individuals seen</td>
<td>84.43%</td>
</tr>
<tr>
<td>Average no. of mixed flocks seen per hour</td>
<td>0.68</td>
</tr>
<tr>
<td>Average no. of species in one flock</td>
<td>6.15</td>
</tr>
<tr>
<td>Largest no. of species in one flock</td>
<td>13</td>
</tr>
<tr>
<td>Largest no. of individuals in one flock</td>
<td>20</td>
</tr>
</tbody>
</table>
**TABLE 40**

Mixed Flocks near La Carpinetía with Western Cordillera, Córdoba. August 1965

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours of observation</td>
<td>14 1/2 *</td>
</tr>
<tr>
<td>Average no. of individuals seen per hour</td>
<td>11.14</td>
</tr>
<tr>
<td>Average no. of individuals seen in mixed flocks per hour</td>
<td>10.76</td>
</tr>
<tr>
<td>Individuals seen in mixed flocks as % of total no. of individuals seen</td>
<td>76.29%</td>
</tr>
<tr>
<td>Average no. of mixed flocks seen per hour</td>
<td>1.10</td>
</tr>
<tr>
<td>Average no. of highly organized mixed flocks seen per hour</td>
<td>1.04</td>
</tr>
<tr>
<td>Average no. of individuals in one flock</td>
<td>9.75</td>
</tr>
<tr>
<td>Largest no. of individuals in one flock</td>
<td>21</td>
</tr>
<tr>
<td>Average no. of species per mixed flock</td>
<td>6.81</td>
</tr>
<tr>
<td>Largest no. of species in one flock</td>
<td>15</td>
</tr>
</tbody>
</table>

*All observations were made in the afternoons, usually late on five different days.*
TABLE 41

Mixed Flocks in the Farallones in the Western Cordillera of Colombia, May 1965

Hours of observation: 17.5
Average no. of individuals seen per hour: 14.40
Average no. of individuals seen in mixed flocks per hour: 11.49
Individuals seen in mixed flocks as % of total no. of individuals seen: 79.76 %
Average no. of mixed flocks seen per hour: 1.26
Average no. of highly organized mixed flocks seen per hour: 0.91
Average no. of individuals in one flock: 9.14
Largest no. of individuals in one flock: 20
Average no. of species per mixed flock: 6.0
Largest no. of species in one flock: 13.
TABLE 42

Mixed Flocks at the Páramo-Frontino Region of the Western Cordillera of Colombia, July 1965.

Hours of observation: 28
Average no. of individuals seen per hour: 10.61
Average no. of individuals seen in mixed flocks per hour: 4.78
Individuals seen in mixed flocks as % total no. of individuals seen: 43.40%
Average no. of mixed flocks seen per hour: 0.86
Average no. of highly organized mixed flocks seen per hour: 0.32
Average no. of individuals in one flock: 7.08
Largest no. of individuals in one flock: 24
Average no. of species per mixed flock: 5.81*
Largest no. of species in one flock: 14

* Based on 19 flocks
SUM TOTAL: Above Anduvar, 1963

Hours spent = 42 1/2

Average no. widis. seen per hour = 8.94

Average no. widis. seen in flocks per hour = 5.41

Inds. seen in flocks as % total widis. = 63.89

Average no. flocks seen per hour = 0.94

Average no. highly organized flocks per hour = 0.61

Average no. widis. per flock = 5.75

Largest no. widis. in one flock = 15

Average no. species per flock = 3.53
(based on 36 flocks)

Largest no. species in one flock = 8
SUM TOTAL: Above Andarve, 1964

Hours Spent = 23 ½

Average no. inds. seen per hour = 7.87

Average no. inds. seen in flocks per hour = 5.74

Inds. seen in flocks as % total inds. = 73.52 %

Average no. flocks seen per hour = 0.94

Average no. highly organized flocks per hour = 0.76

Average no. inds. per flock = 6.14

Largest no. inds. in one flock = 20

Average no. species per flock = 3.91

Largest no. species in one flock = 12
May, 1966 - Sun. Total Double checked

Hours spent = 10

Average no. vlds seen per hour = 6.40

Average no. vlds seen in flocks per hour = 1.50

Inds. seen in flocks as % to total vlds. = 23.44 %

Average no. flocks seen per hour = 0.40

Average no. highly organized flocks per hour = 0.10

Average no. vlds. per flock = 3.75

Largest no. vlds. in one flock = 7

Average no. species per flock = 2.45

Largest no. species in one flock = 4
May, 1966 - Sum Total  Double checked

Hours Spent = 25

Average no. wids. seen per hour = 13.00

Average no. wids. seen in flocks per hour = 9.44

Wids. seen in flocks as % to total wids. = 72.62 %

Average no. flocks seen per hour = 1.04

Average no. highly organized flocks per hour = 0.64

Average no. wids. per flock = 9.08

Largest no. wids. in one flock = 25

Average no. species per flock = 5.44

(Based on 25 flocks)

Largest no. species in one flock = 17
February 1964 - Sum Total

Hours spent = 17½ (All in areas without mixed flocks.)

Average no. nids. seen per hour = 4.51

Average no. nids. seen in flocks per hour = 0

Inds. seen in flocks as % total nids. = 0 %

Average no. flocks seen per hour = 0

Average no. highly organized flocks per hour = 0

Average no. nids. per flock = 0

Average no. species per flock = 0

Average no. species in one flock = 0
Northern Peru

SUM TOTAL: Chechapegas - Hill above town, 1964

Hours spent = 13

Average no. birds seen per hour = 5.38

Average no. birds seen in flocks per hour = 0.69

Flocks, seen in flocks as % to total birds. = 12.86%

Average no. flocks seen per hour = 0.23

Average no. highly organized flocks per hour = 0

Average no. birds per flock = 3.0

Largest no. birds in one flock = 5

Average no. species per flock = 2.33

Largest no. species in one flock = 3
SUM TOTAL: Cutervo - High Altitude Area without Flocks - 1966

Hours spent = 5 ½

Average no. nids. seen per hour = 2.0

Average no. nids. seen in flocks per hour = 0

Nids. seen in flocks as % total nids. = 0 %

Average no. flocks seen per hour = 0

Average no. highly organized flocks per hour = 0

Average no. nids. per flock = 0

Largest no. nids. in one flock = 0

Average no. species per flock = 0

Largest no. species in one flock = 0
SUM TOTAL: Cutervo - Areas where Flechas Occur - 1966.

Hours spent = 17

Average no. nids. seen per hour = 6.41

Average no. nids. seen in flock per hour = 3.94

Nids. seen in flock as % of total nids. = 61.47 %

Average no. flechas seen per hour = 0.76

Average no. highly organized flechas per hour = 0.47

Average no. nids. per flock = 5.15

Largest no. nids. one flock = 13

Average no. species per flock = 3.62

Largest no. species in one flock = 8
Central Ecuador

SUM TOTAL: All areas apparently suitable for

Hours Spent = 111

Average no. wds. seen per hour = 11.96

Average no. wds. seen in flocks per hour = 4.35

Inds. seen in flocks as % total wds. = 36.37%

Average no. flocks seen per hour = 0.80

Average no. highly organized flocks per hour = 0.31

Average no. wds. per flock = 5.43

Largest no. wds. in one flock = 17

Average no. species per flock = 3.38

Largest no. species in one flock = 10
Central Ecuador

from Total Areas apparently suitable for flocks
in which highly organized flocks were seen. - 1966

Average no. birds seen per hour = 14.49

Average no. birds seen in flocks per hour = 6.96

% birds seen in flocks as % total birds = 48.07%

Average no. flocks seen per hour = 1.16

Average no. highly organized flocks per hour = 0.54

Average no. birds per flock = 5.99

Largest no. birds in one flock = 17

Average no. species per flock = 3.66

Largest no. species one flock = 10
Central Ecuador

Sum: Total areas apparently suitable for flocks
But in which highly organized flocks were not seen – 1964 & 1966

Hours spent = 48 3/4

Average no. inds. seen per hour = 8.69

Average no. inds seen in flocks per hour = 0.95

Inds. seen in flocks as % of total inds. = 12.33%

Average no. flocks seen per hour = 0.33

Average no. highly organized flocks per hour = 0

Average no. inds. per flock = 2.875

Largest no. inds. in one flock = 4

Average no. species per flock = 2.125

Largest no. species in one flock = 3
Central Ecuador
9400 - 9800 ft level (below San Juan)
March 13, 14, 18, 20, 24 — 1966
2957 - 2835 m

Hours spent = 14

Average no. nids seen per hour = 17.21

Average no. nids seen in flocks per hour = 8.86
Nids seen in flocks as % total nids = 51.45 %
Average no. flocks seen per hour = 1.50

Average no. highly organized flocks per hour = 0.64

Average no. nids. per flock = 5.90

Largest no. nids in one flock = 15

Average no. species per flock = 3.64

Largest no. species in one flock = 10
Central Ecuador
9200 - 8800 ft level (below San Juan)
March 20, 21, 22, 23 - 1966
2808 - 2683 m

Hours Spent = 14 1/2

Average no.鸟s seen per hour = 15.03

Average no.鸟s seen in flocks per hour = 8.62

鸟s seen in flocks as % total鸟s = 57.34%

Average no. flocks seen per hour = 1.31

Average no. highly organized flocks per hour = 0.41

Average no.鸟s per flock = 6.58

Largest no.鸟s in one flock = 17

Average no. species per flock = 4.0

Largest no. species in one flock = 10
1 ft = 0.305 m, 39.34 inches

3.281 ft = 1 m
Santa Marta

SUM TOTAL: San Lorenzo - August 1964

Hours spent = 33.74% (All in areas with large
and/or highly organized flocks)

Average number nids. seen per hour = 9.36

Average no. nids. seen in flocks per hour = 6.49

Nids seen in flocks as % total nids. = 69.08%

Average no. flocks seen per hour = 0.83

Average no. highly organized flocks per hour = 0.44

Average no. nids. per flock = 7.82

Largest no. nids. in one flock = 32 (Clorophones)

Average no. species per flock = 4.43

Largest no. species in one flock = 14
SUM TOTAL: Pico Espero (Stations 1+2) - April, 1965

Hours spent = 23

Average no. wds. seen per hour = 9.48
Average no. wds. seen in flocks per hour = 4.08
Wds. seen in flocks as % total wds. = 43.12%
Average no. flocks seen per hour = 0.74
Average no. highly organized flocks per hour = 0.35
Average no. wds. per flock = 5.53

Largest no. wds. one flock = 16

Average no. species per flock = 4.06
Largest no. species in one flock = 11
Sierra de Mancha

SUM TOTAL: Pico Esperjoe (Stations 1 & 2) - Aug, Sept 1983

Hours spent = 14 ½

Average no. wilds seen per hour = 9.17
Average no. wilds seen in flocks per hour = 7.24
Inds. seen in flocks as % total wilds = 78.75 %
Average no. flocks seen per hour = 0.176
Average no. highly organized flocks per hour = 0.176
Average no. wilds per flock = 9.55

Average no. species per flock = 5.91

Target no. species in one flock = 15
SUM TOTAL: Paramo de la Negra - April, 1965

Hours spent: 9.3/4

Average no. birds seen per hour = 8.31
Average no. birds seen in flocks per hour = 2.81

Flocks seen as % total birds = 34.57 %

Average no. flocks seen per hour = 0.61
Average no. highly organized flocks per hour = 0.31
Average no. birds per flock = 4.67

Largest no. birds in one flock = 6
Average no. species per flock = 2

Largest no. species in one flock = 2
Sum total:  Paramo La Negra - Aug. & Sept., 1945

Hours spent = 11½

Average no. inds. seen per hour = 13.04

Average no. inds. seen in flocks per hour = 5.91

Fids. seen in flocks as % total inds. = 45.34 %

Average no. flocks seen per hour = 0.96

Average no. highly organized flocks per hour = 0.35

Average no. inds per flock = 6.18

Largest no. inds. in one flock = 15

Average no. species per flock = 3.25

Largest no. species in one flock = 8
SUM TOTAL: Panama-Zumbador - Sept. 1965

Hours spent = 8 1/4

Average no. birds seen per hour = 18.06
Average no. birds seen in flocks per hour = 15.03

Birds seen in flocks as % total birds = 83.22%

Average no. flocks seen per hour = 1.09
Average no. birds in flock seen per hour = 1.09
Average no. birds per flock = 13.78
Largest no. birds in one flock = 22

Average no. species per flock = 17.67
Largest no. species in one flock = 11
SUM TOTAL: Paranoa de Quasca - September, 1963.

Hours spent: 10 3/4

Average no. inds. seen per hour = 6.49

Average no. inds. seen in flocks per hour = 3.26

Inds. seen in flocks as % total inds. = 44.95%

Average no. flocks seen per hour = 0.34

Average no. highly organized flocks seen per hour = 0.28

Average no. inds. per flock = 8.75

Largest no. inds. in one flock = 16

Average no. species per flock = 5.50

Largest no. species in one flock = 9
SUM TOTAL: Parámo de Guascara - April 1965

Hours spent = 13 1/2

Average no. ind. seen per hour = 12.81

Average no. ind. seen in flocks per hour = 4.81

Inds. seen in flocks as % total inds. = 34.51%

Average no. of flocks seen per hour = 0.175

Average no. highjorgannised flocks seen per hour = 0.30

Average no. ind. per flock = 6.5

Largest no. ind. in one flock = 12

Average no. species per flock = 4.1

Largest no. of species in one flock = 6
SUM TOTAL - Bahia de Guasco - August 1965

Hours spent: 4 1/4

Average no. inds. seen per hour: 10.48
Average no. inds. seen in flocks per hour: 2.07
Inds. seen in flocks as % total inds. = 19.74%
Average no. of flocks seen per hour = 0.41
Average no. highly organized flocks seen per hour = 0.14
Average no. inds. per flock = 5
Largest no. inds. in one flock = 8
Average no. of species per flock = 4.33
Largest no. of species in one flock = 7
SUM TOTAL  Mt. above Bogota' - April, 1965

Hours spent = 21 3/4

Average no. inds seen per hour = 9.22

Average no. inds seen in flocks per hour = 2.25

Inds. seen in flocks as % total inds = 24.26 %

Average no. flocks seen per hour = 0.59

Average no. highly organized flocks per hour = 0.14

Average no. inds. per flock = 3.74

Largest no. inds. in one flock = 7

Average no. species per flock = 2.177

Largest no. of species in one flock = 5
SUM TOTAL. Ints. above Bogota - August, 1945

Hours spent = 11 1/2.

Average no. inds. seen per hour = 12.00

Average no. inds. seen in flocks per hour = 4.52

Inds. seen in flocks as % total inds. = 36.76 %

Average no. flocks seen per hour = 0.847

Average no. highly organized flocks seen per hour = 0.52

Average no. inds. per flock = 5.1

Largest no. inds. in one flock = 12

Average no. species per flock = 3.30

Largest no. of species in one flock = 8
SUM TOTAL  Aqua Bonita - April, 1945

Hours spent = 8 1/4

Average no. v. seen per hour = 8.24

Average no. v. seen in flocks per hour = 4.97

Inds. seen in flocks as % total v. = 60.29 %

Average no. of flocks seen per hour = 0.36

Average no. highly organized flocks per hour = 0.36

Average no. v. per flock = 13.67

Largest no. v. in one flock = 26

Average no. species per flock = 8.47

Largest no. species in one flock = 15
SUM TOTAL  Aguas Bonitas - August, 1945

Hours spent = 13

Average no. olds. seen per hour = 13.23
Average no. olds. seen in flocks per hour = 9.31
Olds. seen in flocks as % total olds. = 70.38 %
Average no. of flocks seen per hour = 1.23
Average no. highly organized flocks per hour = 0.85
Average no. olds. per flock = 17.36
Largest no. olds in one flock = 19
Average no. species in one flock = 4.50
Largest no. species in one flock = 11
SUM TOTAL: Parque’ - Townsite & Top - May, 1965

Hours spent = 49 3/4

Average number birds seen per hour = 8.36

Average no. birds seen in flocks per hour = 4.02

Inds. seen in flocks as % total birds = 46.95%

Average no. flocks seen per hour = 0.68

Average no. highly organized flocks per hour = 0.42

Average no. birds per flock = 5.88

Largest no. birds one flock = 18

Average no. species per flock = 3.91

Largest no. species in one flock = 10
Central Cordillera Colombia

SUM TOTAL: Puracé - Down Side & Top - August, 1945

Hours spent = 17

Average no.inds. seen per hour = 9.41
Average no.  inds. seen in flocks per hour = 7.14

Inds. seen in flocks as % total  inds. = 73.53%

Average no. flocks seen per hour = 0.54
Average no. highly organized flocks per hour = 0.54
Average no.  inds. per flock = 12.50

Largest no.  inds. one flock = 22

Average no. species per flock = 8.25

Largest no. species in one flock = 13
SUM TOTAL: Purace - Mascopancide - May, 1963

Hours spent = 19.34

Average number of birds seen per hour = 11.90
Average no. birds seen in flocks per hour = 10.79

Inds. seen in flocks as % of total inds. = 90.54%

Average no. flocks seen per hour = 0.91
Average no. highly organized flocks per hour = 0.81

Average no. birds per flock = 11.83
Largest no. birds in one flock = 28

Average no. species per flock = 17.22
Largest no. species one flock = 16
Central Cordillera Colombia

Sum Total: Purace' - Moscopoil Side - August, 1965

Hours Spent = 13

Average number wids. seen per hour = 14.147

Average mo. wids. seen in flocks per hour = 16.38

Indo. seen in flocks as % total wids. = 92.21 %

Average no. flocks seen per hour = 1.08

Average no. highly organized flocks seen per hour = 1.08

Average no. wids. per flock = 15.215

Largest no. wids. in one flock = 35

Average no. species per flock = 9.36

Largest no. species in flock = 78
Central Cordillera, Colombia
Medellín area: Piedras Blancas, Santa Elena, Boquerón de Palmitas
SUM TOTAL Zo, Montañina, Belmira, etc. July 1945

Hours spent = 23 1/2

Average number widls seen per hour = 8.36

Average number widls seen in flocks per hour = 4.85

Inds. seen in flocks as % total widls. = 58.16 %

Average no. flocks seen per hour = 0.64

Average no. highly organized flocks per hour = 0.55

Average no. widls. per flock = 7.60

Largest no. widls. one flock = 20

Average no. species one flock = 5.0

Largest no. species one flock = 16
SUM TOTAL: Munchique - May, 1965

Hours spent = 89 1/4

Average number birds seen per hour = 8.85
Average no. birds seen in flocks per hour = 5.41
Inds. seen in flocks as % to total inds. = 61.78%
Average no. flocks seen per hour = 0.142
Average no. highly organized flocks per hour = 0.48
Average no. inds. per flock = 17.62
Largest no. inds. in one flock = 18
Average no. species per flock = 4.51
Largest no. species in one flock = 13
SUM TOTAL: Munchique - August, 1965

Hours spent = 18

Average no. inds. seen per hour = 10.06

Average no. inds. seen in flocks per hour = 8.56

Inds. seen in flocks as % total inds. = 85.08%

Average no. flocks seen per hour = 0.61

Average no. highly organized flocks per hour = 0.56

Average no. inds. per flock = 14.0

Largest no. inds. in one flock = 37

Average no. species per flock = 17.82

Largest no. species in one flock = 19
SUM TOTAL: San Gerardo (La Palma) - August, 1965

Hours spent = 9 1/4

Average no. rds. seen per hour = 8.32

Average no. rds. seen in flocks per hour = 5.07

Rds. seen in flocks as % to total rds. = 61.04%

Average no. flocks seen per hour = 0.54

Average no. highly organized flocks per hour = 0.32

Average no. rds. per flock = 9.40

Largest no. rds. in one flock = 20

Average no. species per flock = 5.0

Largest no. species in one flock = 10
SUM TOTAL: La Carpiueteria - (X Farm) - April, May 1965

Hours Spent = 20 1/2

Average no. wds. seen per hour = 8.15
Average no. wds. seen in flocks per hour = 6.88

Inds. seen in flocks as % total wds. = 84.43%

Average no. flocks seen per hour = 0.68
Average no. highly organized flocks per hour = 0.68
Average no. wds. per flock = 10.08

Largest no. wds. in one flock = 20
Average no. species per flock = 6.15

Largest no. species one flock = 13
SUM TOTAL: La Carpintería, August 1945.

Hours spent: 14 1/2 (Over 3 days; all p.m.)

Average no. wids. seen per hour = 11.14

Average no. wids. seen in flocks per hour = 10.76

Wids. seen in flocks as % total wids. = 96.29%

Average no. flocks seen per hour = 1.10

Average no. highly organized flocks per hour = 1.04

Average no. wids. per flock = 9.73

Largest no. wids. in one flock = 21

Average no. species per flock = 4.81

Largest no. species one flock = 15
SUM TOTAL: Farallones - May, 1965

Hours Spent = 14 1/2

Average no. birds seen per hour = 14.40

Average no. birds seen in flocks per hour = 11.49

Indo seen in flocks as % total indo = 79.46%

Average no. flocks seen per hour = 1.26

Average no. highly organized flocks per hour = 0.91

Average no. indus per flock = 9.14

Largest no. indus in one flock = 20

Average no. species per flock = 4.0

Largest no. species in one flock = 13
SUM TOTAL Northern Part of Western Cordillera of Colombia - July 1965

Hours Spent = 28 (All marines with large and/or highly organized flocks)

Average number ind. seen per hour = 10.61

Average no. indts. seen in flocks per hour = 7.78

Inds. seen in flocks as % total indts. = 73.40%

Average no. flocks seen per hour = 0.86

Average no. highly organized flock per hour = 0.32

Average no. indts. per flock = 9.08

Largest no. indts. in one flock = 24

Average no. species per flock = 5.21

(based on 19 flocks)

Largest no. species in one flock = 14