PROGRESS REPORT ON TAGGING EXPERIMENTS CONDUCTED IN 1961 AND ADDITIONAL RECOVERY INFORMATION FOR 1960 TAGGING

by

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I. TAGGING IN 1961 AND RECOVERIES IN THE SAME YEAR

1. Outline of tagging operations

Tagging in 1961 was carried out in the Japan Sea and the North Pacific Ocean, including the Bering Sea, by one research vessel of the Ministry of Agriculture and Forestry (Hokko-maru, 220 g.t., 430 h.p.) and two chartered vessels (Takuyo-maru, 171 g.t., 330 h.p.; Wakashio-maru, 153 g.t., 320 h.p.) and from three fishing vessels (Eiiku-maru, 11 g.t., 45 h.p., and others). Tagging from the fishing vessels was carried out by research workers aboard the vessels. Longlines were used for catching salmon as in the years 1958-1960.

The period of tagging, the tagging locations, the number of fish tagged, etc., are summarized in Table 1 and Figure 1 for each tagging vessel. In Figure 1, the North Pacific areas occupied by tagging vessels are divided into five regions (Regions A - E) for the purpose of this presentation; and the details of tagging data are given in Table 2, according to the above area division.

Most of the red salmon, about 70%, were tagged in Regions A and B and in part of Region D (northern part, in early June). Chum salmon were tagged in all regions in comparable numbers; and 80% of the pink salmon were tagged in Region E and in part of Region D (southwestern part, late June). A total of 6,527 salmon were tagged in the entire area (excluding the Japan Sea); and the numbers of sockeye, chum and pink salmon tagged were about equal, except that a slightly larger number of pinks were tagged than sockeye and chum.

2. Recoveries

(1) Recoveries from 1961 tagging (as of October 10, 1961)

a. Sockeye (Figure 2a): A total of 189 sockeye were recovered; 98 from Bristol Bay (including the Alaska Peninsula, where a small number of recoveries were made) and 91 were reported from the high seas. It was shown that Bristol Bay sockeye salmon were present in Region A during late April through late May. Otherwise, there is nothing new in the movements of tagged sockeye salmon.
A question may arise as to the relationship between the Bristol Bay salmon found in Region A and those which were present in Region B during early June. The fork length of 877 sockeye salmon caught in Region A (age determination has not been completed) ranged from 28 cm. to 62 cm., with an average length of 51.4 cm. The fork length of sockeye salmon caught in Region B ranged from 50 cm. to 68 cm., with an average length of 59.7 cm. It appears that there is no direct relation between these two concentrations of sockeye salmon; no definite conclusion can be drawn, however, until age determinations and a more complete analysis of length composition have been made.

b. Chum salmon (Figure 2b): Of 25 recoveries made in 1961, only 3 were from coastal areas; one from Kotzebue Sound, Alaska, and two from Hokkaido (autumn chum). One chum salmon tagged in the eastern part of Region A on April 25 was recaptured on the Pacific coast of Hokkaido on October 1; and one chum salmon tagged in the central part of Region A was recaptured in the vicinity of 50°N. - 160°E. (high seas). These two recoveries constitute additional information regarding the offshore distribution of Asian chum salmon.

c. Pink salmon (Figure 2c): Of 53 recoveries made in 1961, one fish tagged in the eastern part of Region A on April 27 and recaptured in Pybus Bay, Southeastern Alaska, on July 27, showed a movement which has not been demonstrated by tagging in past years.

d. Coho and Chinook salmon: One coho and one chinook salmon were recovered after travelling short distances.

(2) Recoveries in 1961 from tagging in previous years

a. Sockeye salmon (Figure 3a): Seven sockeye salmon were recaptured from tagging in 1961. There were two recoveries from Bristol Bay, but their movements do not add new information to the results of previous tagging experiments.

b. Chum salmon (Figure 3b): Two recoveries were made from 1959 tagging and four recoveries from 1960 tagging.

In addition to the recoveries reported above, there were a few fish for which the celluloid discs with letters and numbers were lost and no tagging data are available.

II. RECOVERIES FROM THE U.S.S.R. COAST IN 1960 FROM 1960 TAGGING

Summarized below are the recoveries in 1960 reported by the U.S.S.R. at the Japan-Soviet Commission meeting in 1961.

1. Chum salmon (Figure 4a): A total of 15 chum salmon were recovered, of which 14 were from tagging in "waters south of 48°N." (offshore waters southeastward from the coast of Hokkaido and the Kurile Islands). Tagging in this region commenced in 1960 and these 14 recoveries are important for studying the distribution of pink salmon from various coastal districts of the Far East. Nine of these 14 fish were autumn chums, of which six were reported from the Amur area, two from the southwestern coast of Sakhalin and one from the northeastern coast of Sakhalin. The remaining five were summer chums, of which one was...
reported from the Amur, three from the coast of the western Okhotsk Sea and one from West Kamchatka.

Many fish with longline hooks have been found in the catches of autumn chum salmon of the Amur River system, and also there have been a recoveries of Amur chum salmon from tagging in the central part of the North Pacific Ocean. Hence, it has been proposed that Amur autumn chums occupy, during their ocean residence, waters off the eastern coast of the South Kuriles and Hokkaido, where longline fishing is conducted (Hokkaido Regional Fisheries Research Laboratory, Hokkaido Provincial Fisheries Research Station, data for the Japan-Soviet Commission meeting, 1960). The above recoveries support this hypothesis.

It has been known that summer chums bound for the Okhotsk district migrate from both Hokkaido waters and the central North Pacific. Hirano (1953) states that Okhotsk summer chums migrating through waters off Hokkaido become separate from West Kamchatka chums in Kurile waters around Urup Pass. In other words, he considers that summer chums found in waters off Hokkaido enter the Okhotsk Sea mainly through Friza Strait (formerly Etorofu Strait). It is not known whether or not the three chum salmon tagged in an area off the Kurile Islands in 1960 and recovered from the Okhotsk district belong to the same summer chum stock as "Tokishirazu" which was fished in waters close to Hokkaido during pre-war years.

2. Pink salmon (Figure 4b): Four pinks were recovered from tagging in waters off the east coast of Hokkaido: three from the Okhotsk coast and one from West Kamchatka.

A total of 23 coastal recoveries were reported from pink salmon tagging in the Japan Sea in 1960. As many as 17 recoveries were made from the southwestern coast of Sakhalin; in addition, two were reported from the southeastern coast of Sakhalin, two from Primorski, one from the Amur district and one from the Okhotsk district. Comparing this result with the coastal recovery plan in 1958, in which nine out of 18 recoveries were made in the Amur system (Kosugi and Oya, 1960), it is assumed that the population composition of Japan Sea pinks has changed in a complicated way. One pink salmon tagged in the Japan Sea was recovered from the Ola River, Tauisk Bay, of the Okhotsk coast. This is the first example of such movement demonstrated by tagging.

Addendum: After compiling the information for this report, we were informed that one of the sockeye salmon tagged in Region A (49°04'N., 164°36'W.) on May 22, 1961, was recaptured on July 26 in Rivers Inlet, British Columbia.
1961年標準協議調査追記報告
及び1960年再補追加報告

1961年10月

(第322)
1. 1961年校流・再捕結果

1. 放流概況 1961年の放流は日本海、ベーリング海を含む北部海域において271隻の漁船株所属の調査船（北光丸、220応、410HP）、27隻の療船（福栄丸171応、320HP）及び調査員が乗船した漁船3隻（楽風丸、11応、45HP）によって、1958年以後も同様、延繩を使用して行われた。

各船の放流時期、場所、放流数等の概略は表1に示されている。表1には以下のように、放流の後で得られた結果を示し、表2に1961年の放流の詳細を示した。

Redの放流はA、Bの全域及びD域の一部（北部、6月上旬）で圧倒的に多く（約70％）を占め、Chumは放流全域に大いに分布し、Pinkは全E域とD域の一部（南部、6月下旬）で卓越した約80％を占めている。1952年全体として（日本海を除く）6527尾の放流のうちPinkが若干多いが、Red、Chum、Pinkかほぼ同率を占めている。

2. 再捕状況

（1）1961年放流により再捕 1961年10月10日現在

a. Red（方2a）少数の再捕がある Alaska半島を含むBristol湾で98尾、公海で81尾合計179尾の再捕がある。これに再捕されたBristol湾Redが4月下旬及び5月親月にA海域に到達し（2）を示す結果
そのような関連性があるかという問題がある。A海域のRedの尾長が長く、平均は28cm
が562cm、平均は57cm、をもつ平均57.4cm（N=877尾）。
一方、D海域のRed（北東部）の平均は56cm
が568cm、平均58.7cmである。従って両者の
間には直接の関連性がないようにみえる。しかし
この問題に対する結論はさらに検討が必要な
体長についてはの検討等を幾つも付与した。

C. Pink：（※2回c）再捕数53尾
中4月27日A海域東部で放流、7月27日
南東Alaska Pybus港での1尾の再捕が
すでにその結果と比べて独特的である。

d. Silver, King: SilverとKingは
何人も短距離内での1尾の再捕にすぎない。
（2）1960年以前放流による1961年再捕
a. Red：（※2回a）Redの場合は
7尾の再捕数が1960年放流のものである。
これがBristol港での再捕を含んでいないが、
現在まで検討放流の結果によって考察が行われ
りと分布、洄游と考察して果たし事実上認め
らわれない。

b. Chum：（※3回b）1957年放流
によるも1尾、1960年から4尾が4尾の公海
99日の再捕が存在。

以上1961年における再捕結果を検討したが、
5尾は外に相当するものは1あるがその根拠がない。
標識魚（放流日、場所不明のもの）が若干ある。
II. 1960年当時、同年の連続変再捕結果

1961年の日を含め Adolescent 連続変則魚類

さられた1960年の再捕結果を追加し1962年再捕結果

1. Chum:（秋八回）合計15回の再捕の551960

年から始られた“生鮮水産業”（北海道千歳

川流東方水域）からの14回は同水域雨で

北海道各地域の分布状況を示唆する重要な

である。14回の再捕のうち9尾が秋サケで156尾が

Amur, 2尾がSakhalin南西半, 1尾

がSakhalin東半であり。夏サケの5尾は

Amur／尾, Okhotsk西部3尾, 2Kamchatkaの

1尾を含んでいる。

秋サケについては、従来Amur秋サケ群中に

釣魚の場が多い発見されていると予想され

中央部寄りの水域からの標識魚がAmur系の川

川に再捕されており、Amur系秋サケの海洋

棲息の検討場では、特に延繋適性がある南側

北海道東方水域という推定（北海道, 北海道

日外海域調査資料, 1960）が二等実証されたか

わけである。

Okhotsk 津波の夏サケ群については、現状北極

附属水域の枯れ干ばつ中央寄り方面から雌雄不明なものに

ほとんどが知られている。平野（1953）によれば”

北海道附属の水域からのOkhotsk系夏サケは千歳

川流東方の主にUrup水道付近で"Kamchatka系と分離する””と

北海道附属水域のOkhotsk系夏サケは千葉

Frya海満（旧千ユロ海満）を通過する””の

とする。しかし1960年のこの桂旧結果が

示した千歳川流東方水域からのOkhotsk系夏サケの移

動群は、従前の北海道附属水域のいかし

トキシラズ群に相当するかはいまのところ不明

である。
2. Punkt: (関係6) 北海道東部水域
からOkhotsk洋123度、とKamchatka半岛計4度。

日本側に発生した。

その後も1972年には、1960年以降長期に
Sakhalin南西部に多い降下が多く欧州再捕23度
に17度含まれ。Sakhalin南東部及び沿海州
を含むそれにAmur川22度の各ほぼ
12度に。二の結果は1958年に大治療落
8度9度Amur川川22度再捕（小柄
大正、1960）させたことと、大正設これに
日本海に対しそれの要請構想が複雑に
展開されていることが推察される。なおこの
Okhotsk洋29度に大きな再捕はTaimisk
筆Ola河からも20もの数、残数巻じ2
月初めの例2有30。

追捕。本報受取知の後本年5月22日
A海域(49°04N、164°36E)21枚捕れた
別の15度が南東ラスカのRiverse Inlet
で約25日後の7月26日に再捕されたという通報
があった。

W
**Table 2. Tagged number by Area**

<table>
<thead>
<tr>
<th>Area</th>
<th>Ship</th>
<th>Period</th>
<th>No. of fish operations</th>
<th>Red</th>
<th>Chum</th>
<th>Pink</th>
<th>Silver</th>
<th>King</th>
<th>Total</th>
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<td>25, April-28, May</td>
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<td>2</td>
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<td>TY</td>
<td>13, June-23, June</td>
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<td>27</td>
<td>14</td>
<td>0</td>
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<td>395</td>
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<td>D</td>
<td>W</td>
<td>13, May-19, May</td>
<td>5</td>
<td>14</td>
<td>107</td>
<td>9</td>
<td>0</td>
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<td>110</td>
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<td>27, July-1, Aug.</td>
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<td>556</td>
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<td>613</td>
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<td>2, June-18, June</td>
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<td>832</td>
<td>99</td>
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<td>2057</td>
<td>1923</td>
<td>2417</td>
<td>117</td>
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<td>6527</td>
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* See Fig. 1. ** See Table 1.

Submitted Nov 11, 1961
Tokyo, Japan

Note: Figures corrected

Remark: Counts for 4,555
Yonago (kondo-toggig)
表 及 二 回

第1表 1961年マグスツイ標識放流表
第2表 海域別放流尾数，1961年
（北太平洋）

第1回 1961年マグスツイ標識放流結果
第2回 1961年放流，1961年再捕結果
  a. Red
  b. Chum
  c. Pink

第3回 1960年以前放流，1961年再捕結果
  a. Red (1960-1961)

第4回 1960年放流，1960年再捕結果再捕
  a. Chum
  b. Pink
### DOC. 485 の正誤表

<table>
<thead>
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<th>page</th>
<th>line</th>
<th>errors</th>
<th>corrects</th>
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<td>5行目</td>
<td>Region B</td>
<td>Region D</td>
</tr>
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<td>chum</td>
</tr>
<tr>
<td>3</td>
<td>2行目</td>
<td>have been no</td>
<td>have been few</td>
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</tbody>
</table>

1. 第2回の0.45°N 158°W 附近が北海道沿岸の航路を
2. 係（153°W）附近）を移す。
2. 両表とも11回の海域別航路航時は/2度0の位置がある。
このまま航路の航程に変更があったため、この訂正は後で
通報した。
1961年3月

1961年10月
<table>
<thead>
<tr>
<th>Ship</th>
<th>Period</th>
<th>No. of Fish operations</th>
<th>Tagged Number</th>
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<tr>
<td></td>
<td></td>
<td>Red</td>
<td>Chum</td>
</tr>
<tr>
<td>Hokko-maru (H)</td>
<td>25, April - 10, June</td>
<td>15/2</td>
<td>442</td>
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<td>Takuya-maru (TY)</td>
<td>17, May - 10, Aug.</td>
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<td>736</td>
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<td>Wakashio-maru (U)</td>
<td>29, April - 6, Aug.</td>
<td>46</td>
<td>20</td>
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Total: 8487

*Upper figure: Number of fish released
Lower figure: Catch in number of fish

(2). Japan Sea

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<th>Period</th>
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<th>Tagged Number</th>
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<tbody>
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<td>Eifuku-maru &amp; other</td>
<td>23, March - 8, June</td>
<td>13</td>
<td>649</td>
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<td>Area</td>
<td>Ship</td>
<td>Period</td>
<td>No. of fishing operations</td>
</tr>
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<td>13, June-23, June</td>
<td>7</td>
</tr>
<tr>
<td>C</td>
<td>TY</td>
<td>1, Aug.-10, Aug.</td>
<td>9</td>
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<td>W</td>
<td>13, May-19, May</td>
<td>5</td>
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<td>H</td>
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<td></td>
<td></td>
<td>Total</td>
<td>47</td>
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<td>3</td>
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<td>E</td>
<td>W</td>
<td>29, April-11, May</td>
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<td>W</td>
<td>2, June-18, June</td>
<td>13</td>
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<td></td>
<td>Grand Total</td>
<td>112</td>
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* See Fig. 1.  ** See Table 1.
Fig. 1 Tagging location 1961.

- Hokko-maru
- Takuyo-maru
- Wakashio-maru
- Eifuku-maru & other

Japan Sea
13 660
449 pink
11 maru

13, May - 6, Aug.
Fish, No.
2774
total tagged No.
825
red.
927
913
Chum
pink

25, April - 28, May
25
1247
875
288
82
Fig. 2. Recoveries 1961, Release 1961.

Red

0 Release

0 Recovery

as of 10, Oct.
Fig. 2
b. Chum

O Release

→ Recovery
Fig. 3
A. Red (only 1960–1961)

as of 10 Oct.

Release

Recovery
Fig. 1 Tagging Location 1961 (Revised figure for Doc. 485-Fig. 1)

- Hokko-maru
- Takuyo-maru
- Makashio-maru
- Ifuku-maru & others

Graphs and data points are shown with specific locations and dates:

1. Aug, 9
2. Aug, 163
3. Aug, 264
4. Aug, 101
5. June, 7
6. June, 8
7. June, 2

Graphs indicate:
- Fish No.: 276
- Total tagged: 81
- Red: 1
- Chum: 9
- Pink: 107
- Silver: 2
- King: 9

Locations and tags are marked with specific coordinates and symbols.
Fig. 4  USSR Recoveries 1960, Release 1960.

2. Chum

- Release
- Summer Chum
- Autumn Chum

Recovery