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SAMPLING THE EASTERN PACIFIC OCEAN TUNA CATCH FOR SPECIES COMPOSITION AND LENGTH-FREQUENCY DISTRIBUTIONS

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SAMPLING THE EASTERN PACIFIC OCEAN TUNA CATCH FOR SPECIES COMPOSITION AND LENGTH-FREQUENCY DISTRIBUTIONS

At the beginning of the year 2000, the Inter-American Tropical Tuna Commission (IATTC) changed the "standard" length-frequency sampling program (Tomlinson *et al*., 1992) to a joint species composition-length frequency sampling method (Tomlinson, 2002). In this brief report, the results for the year 2000 have been updated and the preliminary results for 2001 are given.

Three different estimates for each species are given in Table 1. With the standard method the catches of the three species were treated as known and three independent estimates ("standard") of the length frequencies were completed, one for each species. For the species composition method, only the combined catch of the three species was treated as a known and the species composition samples were used to estimate the catch for each species. These estimated catches, by species, were then used to estimate the length frequencies for each species. To obtain the confidence regions for the estimated catches from the species composition method, the sample data was resampled 1000 times, resulting in 1000 estimates for each of the catches. Since these 1000 estimates can be averaged, this results in two estimates of each catch value, one from the sampling model ("best") and one from the average of the 1000 estimates ("resample").

Of the six estimates (best) obtained by species composition sampling, the confidence regions of only two contain the standard catch within their region, the 2000 yellowfin and the 2001 skipjack. For both years, the bigeye catch estimated by the species composition method was significantly higher than the standard value.

Comparisons of the annual length frequency for each species, for each year, are shown in Figures 1 and 2. Except for the differences in total catch, the six length frequencies shown in Figures 1 and 2 do not show much difference. In other words, the two sampling models estimate the same relative frequency of occurrence by length.

LITERATURE CITED

Tomlinson, Patrick K. 2002. Progress on sampling the eastern Pacific Ocean tuna catch for species composition and length-frequency distributions. Inter-Amer. Trop. Tuna Comm., Stock Assess. Rep., 2: 357-365.

Tomlinson, Patrick K., Sachiko Tsuji, and Thomas P. Calkins. 1992. Length-frequency estimation for yellowfin tuna (*Thunnus albacares*) caught by commercial fishing gear in the eastern Pacific Ocean. Inter-Amer. Trop. Tuna Comm., Bull., 20 (6): 357-398.

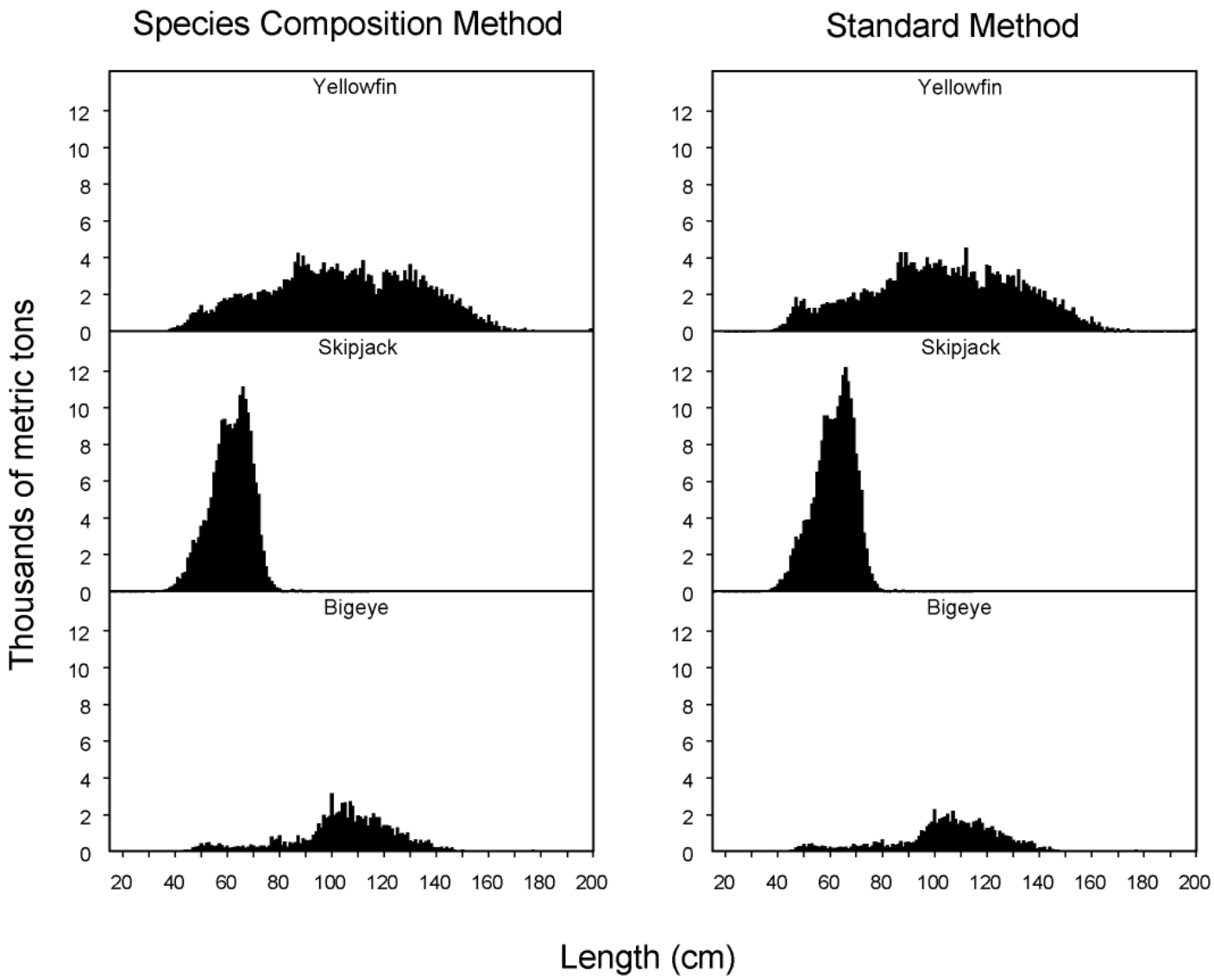

FIGURE 1. Catches of tunas by 1-centimeter length intervals during 2001.

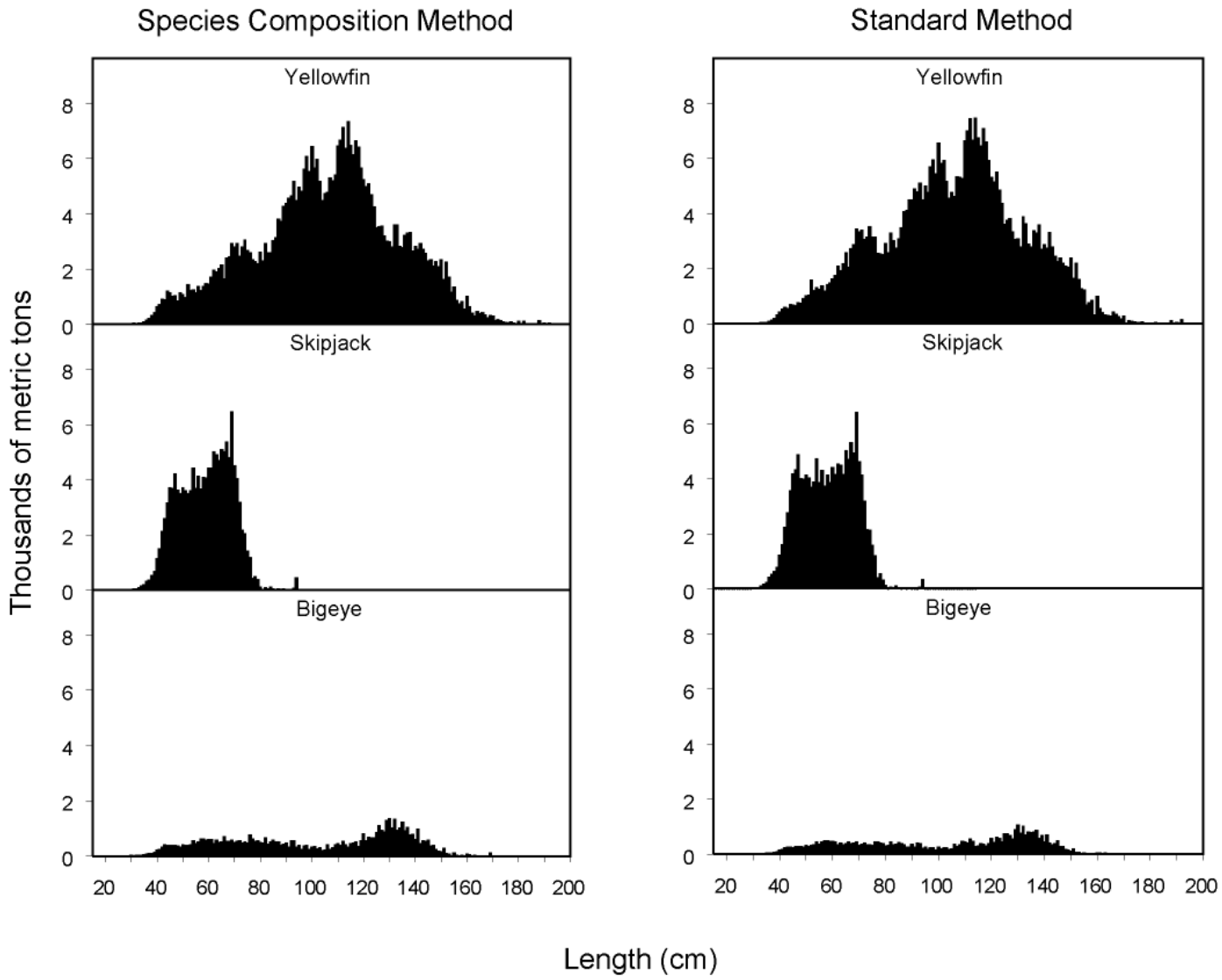

FIGURE 2. Catches of tunas by 1-centimeter length intervals during 2001.

TABLE 1. Estimated catches, in metric tons, of three species of tunas in the eastern Pacific Ocean during 2000 and 2001.

Species		Standard method	Species composition method			
			Best	Resample	Confidence region Low	Confidence region High
Yellowfin	2000	272,711	270,909	271,183	264,699	277,667
	2001	394,532	383,214	383,018	376,188	389,848
Skipjack	2000	211,257	199,325	199,301	189,649	208,953
	2001	144,282	140,065	140,525	133,089	147,961
Bigeye	2000	70,136	83,870	83,620	75,056	92,184
	2001	43,616	58,832	58,567	51,767	65,367