AN ANALYSIS OF AERIAL WATERFOWL PRODUCTION SURVEYS IN ALASKA

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Introduction:

For the past several years aerial brood surveys have been attempted on an experimental basis in conjunction with ground production studies. In most attempts these aerial surveys have met with indifferent success to outright failure. The most intensive of these experimental brood surveys, and the most critically evaluated, was part of a larger study conducted by L. J. Rowenski in conjunction with his graduate research in the Minto Lakes area in 1956. Partly because of the great difference in experience between the two observers in this study, but primarily because of basic inherent weaknesses the results were of doubtful usefulness.

In 1961 as requested, an effort was launched to conduct a full scale operational brood survey, previous experimental failures notwithstanding. The project was terminated as unsatisfactory when the production report came due in late July after only four days of actual transect flying.

Methods and Equipment:

A Cessna 180 on floats was flown 150' above the terrain at 110 mph. The standard breeding population transects were used covering 220 yards on each side of the aircraft for a census strip of 1/4 mile. Broods, single birds and pairs were recorded. All birds were classified as to species, age class of broods and number of young when possible. The survey started at Tetlin on July 8 and terminated on the Yukon Delta July 19.

Weather Conditions and Results of Survey:

Flying conditions in Alaska during July were perhaps worse than usual, but not unpredictably so. In other words, poor flying weather can be expected every July in some place and manner to disrupt a schedule as demanding as a state-wide waterfowl survey. In May and early June during the breeding population survey Alaska's weather is reasonably good except for local fog patches on the Bristol Bay and Bering Sea coasts. By early July, however, the weather pattern has changed abruptly. The mountainous Interior is characterized by thermal activity creating extensive thunderstorms and gusty winds. Rain, fog and low-lying stratus frequently moves in from the Bering Sea across the coastal tundra.

It is possible to fly daily at some time and in some areas; to go from place to place by skirting storms, judiciously selecting open mountain passes, or following rivers under minimum conditions. In this manner a reasonable number of transects might be covered every year, although frequently under conditions not conducive to efficient censusing. The major weakness of this

system is lack of comparability from year to year, because ~~one~~ enough of the same transects very likely cannot be reached within the time limit imposed.

The earliest date feasible to start brood counts in Alaska is July 5 and preferably not until July 10. At this time the only Class II ducks of any abundance are pintails. Mallard, teal, shoveler and canvasback are Class II but they are either not visible enough or numerous enough in the aggregate to add appreciably to the total. By mid-July widgeon are Class II and scaup have started to hatch. By July 28 when scaup are becoming visible from the air and the early broods are in large aggregations or on the wing, the survey must terminate for the Regulations meeting.

Under the best of conditions very few broods are counted from the air, probably too few to be of statistical significance when considered in the aggregate. Table I gives a summary of the coverage and broods counted. By early July in the Interior emergent vegetation (largely Equisetum) has grown well above the water level in wide belts out from the shoreline in water as much as 20-25 inches deep. Many broods never leave this band of vegetation and are impossible to see from the air. This is particularly true of puddle ducks, but even slight winds send diving ducks into this sheltered water and it is a rare day when the wind fails to blow. The survey at Minto, as reflected in the summary, was one of those rare days. Gusty winds and low scud had wracked the area for several days when, late in the evening of July 10, it suddenly became glassy calm for about an hour and a half. We were right there to take advantage of the lull and consequently observed a fair number of broods even though the light was relatively poor. In order to conduct an operational survey, though, it is not possible to sit and wait for the opportune moment.

At Tetlin conditions were fair but not optimum. Few broods were counted partly because few were of Class II size yet. Of the 20 transects on the Yukon Flats only six were surveyed under very windy conditions. Several days were spent at Fort Yukon waiting for better survey conditions when finally we gave up and decided to try the Yukon Delta. Winston Banko was going to be the observer during his tour of the Yukon-Kuskokwim Delta. We departed Fairbanks and proceeded to Aniak after a weather delay enroute. During the six days we were together it was possible to fly on the Yukon Delta only a small part of two days and then only with a restricted clearance. Following Banko's departure on July 22, the remainder of the month was totally unflyable on the Bering Sea Coast as far as survey work was concerned.

Thus, out of 200 sixteen-mile transects it was feasible to fly only 23 between July 8 and July 28. In a better year perhaps half the total could be covered during 20 days in July. But in no two consecutive years could one reasonably expect to cover enough of the same transects under acceptable conditions to make the results comparable or statistically significant. Too many factors militate against an operational aerial production survey in the far north to make it sound, either economically or biologically. Smith has enumerated the various weaknesses of such an operation quite adequately. All the reasons he listed for the Northwest Territories are valid in Alaska plus the far more rugged physiography of Interior Alaska and the maritime weather along the Bering Sea Coast.

Recommendations:

In lieu of aerial surveys, there is real hope for good production forecasts from ground studies if comparability can be developed through continuity of personnel and study areas. Logistics and mobility has been a major obstacle in the past, but this has been minimized to a large extent with the stowaway sectional skiff developed last year. This is an 11', 140# plastic boat with five nesting sections capable of fitting into a Cessna 180 equipped with an auxiliary fuel tank.

In Alaska there are two distinct areas of weather influence or general ecological sets of conditions. These are recognized in the broad river valleys of the Interior and the coastal tundra of western Alaska. Studies at Minto, Tetlin and Fort Yukon indicate that factors influencing production operate similarly in any given year throughout interior Alaska. Banding shows a remarkably similar pattern of distribution of waterfowl from these three areas. Therefore, a permanent ground study at either Tetlin or Fort Yukon should suffice to predict trends for all of interior Alaska. Minto has proved too erratic as a study area in the past because of unpredictable flooding conditions. Lensink is currently engaged in a waterfowl study at Fort Yukon in conjunction with the Rampart Dam project. It would seem logical to continue this as the permanent Interior Study area for purposes of continuity.

A production study in the maritime climate typical of the west coast might logically be established on the newly acquired Clarence Rhode Wildlife Range on the Yukon-Kuskokwim Delta. Whether or not factors influencing production work uniformly throughout the coastal environment much as they do in the Interior has not yet been determined. This is information which could be readily obtained with spot control studies in Bristol Bay and at Kotzebue Sound.

If homogeniety prevails along the coast similar to that of the Interior, reasonably accurate production forecasts might eventually come from Alaska with two properly devised continuing ground studies. There is no question in my mind at the moment that operational brood surveys to forecast production in the far north is not the answer. Ground surveys show a definite promise of hope.

Table I

SUMMARY OF BROODS

Area & X-Sect No.		Size of Sample	Date	Broods Observed					Av. Size
				Class I	Class II	Class III	Unclass	Total	
Tetlin	1	4 sq mi	7-8-61	1				1	
	2	4	"	2				2	
	3	4	"	1			2	3	
	4	4	"	1				1	
	5	4	"						
	6	4	"	1				1	
	7	4							
Minto	1	4	7-10-61	4	8			12	
	2	4	"	4	2			6	
	3	4	"	3	4			7	
	4	4	"	3	6			9	
	5	4	"	2	3		1	6	
	6	4	"	3	3			6	
Yukon Flats	10	4	7-13-61	1	2			3	
	11	4	"						
	12	4	"						
	13	4	"	1				1	
	14	4	"						
	16	4	"		1			1	
Yukon Delta	45	4	7-19-61	1				1	
	46	4	"	1				1	
	47	4	"						
	48	4	"	1				1	
TOTALS	23	92		29	30		3	62	22 broods 5.3