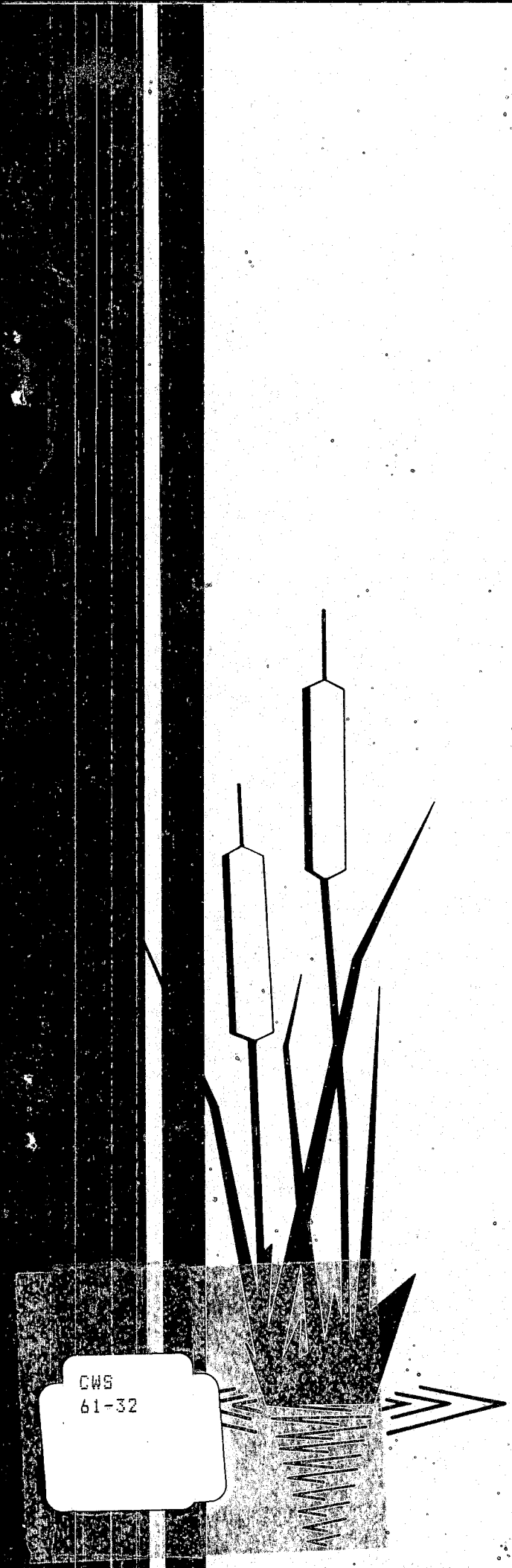

CANADIAN WILDLIFE SERVICE

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CWS-~~32-61~~ Stephen, W.J.D.

61-32 Development & testing of scaring devices; annual job progress report. Saskatoon, Canadian Wildlife Service, 1961.

2 .

1. Bird control. 2. Waterfowl - Management. I. Title.

ANNUAL JOB PROGRESS REPORT

Title Development and testing of scaring devices.

Designation 03 - 4, 1961.

Prepared by W.J.D. Stephen

Objectives

1. Promote and assist in development of devices which will prevent damage by migratory birds.
2. Test devices which are developed to prevent damage by migratory birds.

Report on development of a new automatic acetylene exploder

Introduction

Trials of automatic acetylene exploders in 1960 indicated that the device was capable of preventing ducks from landing in grain fields but could not be depended upon to operate automatically for periods of several days without manual adjustment (Stephen, 1961). It was considered desirable to have improved-design acetylene exploders to field test in 1961.

It was decided that dependability and ease of operation of the acetylene exploder could be improved using a solenoid valve to control gas flow and a spark plug-coil ignition system. Such a system required a timer to control the circuits. The timer would also make the exploder more economical and less annoying to use by allowing the machine to cease operation at night.

The program desired for operation of the exploder was as follows:

1. The exploder should cease operation at night and resume during the day. Approximate times of shutdown and resumption would be one hour after sunset and one hour before sunrise respectively.

2. During the daily operating period there should be an explosion approximately once per minute at least during dawn and dusk. It might operate at approximately one explosion per three minutes at other periods of the day.

During the fall of 1960, Mr. S.A. Gardiner, of the Navigational Aids section of the Radio and Electrical Engineering Branch of National Research Council was asked if he could improve the design of the exploder. Through an oversight he was not made aware of the need for an improved acetylene metering system until February, 1960. He then began to develop a timer which would control a solenoid valve and ignition circuit. In addition, in January, 1961, after some preliminary discussion, a contract was given to

Dr. Peter Nikiforuk of the Mechanical Engineering Department, University of Saskatchewan, to develop a working model of a timer to control the explosion interval of the solenoid valve - spark coil exploder.

Results

In early May, 1961, working models of automatic acetylene exploders with timers of two designs were completed. The N.R.C. timer used a combination mechanical-electronic system and the U. of S. timer used a completely mechanical system to achieve the desired program.

The N.R.C. timer was chosen as the model to be used for exploders which would be manufactured and tested in 1961. The basis for that decision was that construction was liable to be less costly since less skilled labour was expected to be required for assembly. The N.R.C. timer design also appeared to be in a more completely finished form, with more of the "bugs" worked out. Consequently, components for conversion of the 152 Zon acetylene exploders owned by Canadian Wildlife Service, to solenoid valve - spark coil - N.R.C. timer operation were ordered in early June.

Assembly of the components began in mid-July. Unskilled labour (myself included) was used for assembly and conversion. Approximately 66 Zon acetylene exploders were converted and ready for use by August 15th.

Thirty-two converted exploder units were used in fields in 1961 during investigations of sandhill crane damage prevention near Last Mountain Lake, Saskatchewan. Six converted exploder units were set up on Vancouver Airport in October to see if they would be useful in reducing the bird hazard to aircraft there. Three converted exploder units were also used in University of Saskatchewan, Field Husbandry experimental fields at Saskatoon.

Conclusions

On the basis of satisfactory operation and effect observed in trials, negotiations are proceeding through Crown Patents and Developments Limited with prospective manufacturers for commercial production of a new acetylene exploder based on the C.W.S. - N.R.C. prototype.

Proposed for 1962

1. Test commercially produced automatic acetylene exploders and other devices used to prevent damage to human interests by migratory birds.

Literature cited

Stephen, W.J.D.
1961. Experimental Use of Acetylene Exploders to Control Duck Damage. Trans. 26th N. Amer. Wildl. & Nat. Res. Conf., pp. 99-112.

Saskatoon, Saskatchewan.
December 15th, 1961.

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