

THE WESTERN CEDAR BORER IN
COASTAL BRITISH COLUMBIA

by

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INTRODUCTION

The western cedar borer (Trachykele blondeli Mars.) has been a constant problem in products of western red cedar in British Columbia for many years. In order to provide ready reference to the current knowledge of the insect and its damage this summary has been prepared for the use of foresters and forest operators. The information has been gathered primarily from investigations by G. R. Hopping and from the Forest Biology Survey of the Department of Agriculture.

DESCRIPTION OF THE INSECT

This beetle belongs to the family of insects commonly known as the flat-headed borers or "Buprestids". The adult is a brilliant green beetle about three-fourths of an inch long and about one-fourth of an inch wide. It is boat-shaped and may always be recognized by several deep depressions on the prothorax (the body immediately behind the head). (Fig. 1).

The egg is whitish, oblong, one-tenth of an inch long, rounded at one end and bluntly pointed at the other. The larva, when fully grown, is one and one-half inches long, flattened, white and rather fleshy in appearance. It has a small head and immediately behind this, the prothorax is a much larger oval segment about three tenths of an inch wide. Behind the prothorax the rest of the larva is smaller and made up of twelve segments resembling a tail. The broad, flattened prothorax has a U-shaped, light brown mark on the upper surface. The pupa is white, like the larva, but the development of wings, legs and other appendages is apparent. (Fig. 2).

Life History and Habits

The adult beetle emerges during the period of May 10 to June 10 according to studies carried out at Pender Harbour, B. C. (5, 6, 7). Egg laying takes place between June 15 and July 15 and the incubation period for the egg is 12 to 18 days before hatching. The larval period is very long and at least 3 years and two months under conditions of observation (7). It is probable that this may vary under different conditions of area, altitude and host material. The pupal and adult dormant period lasts about nine months (5, 2,) of which about 8 months is spent as an adult in the pupal cell.

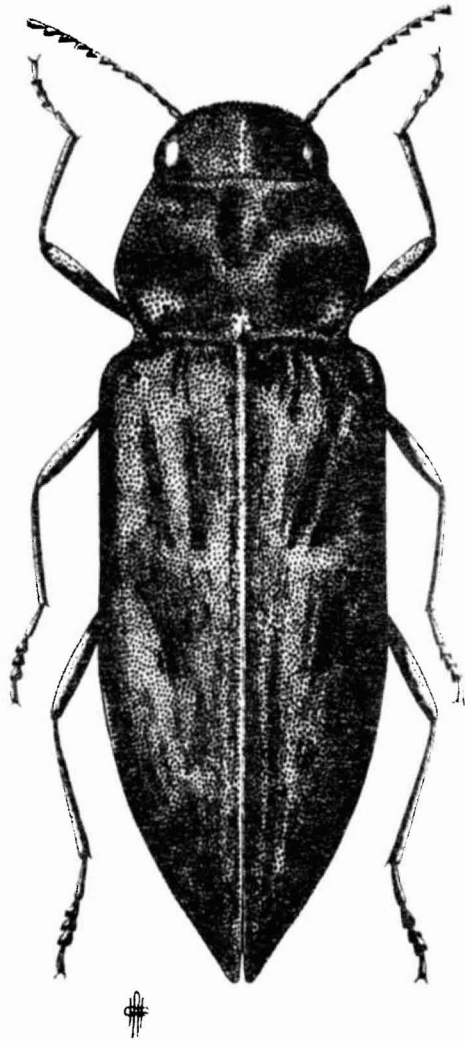


Fig. 1. Adult western cedar borer (X7)
(from G.R. Hopping).

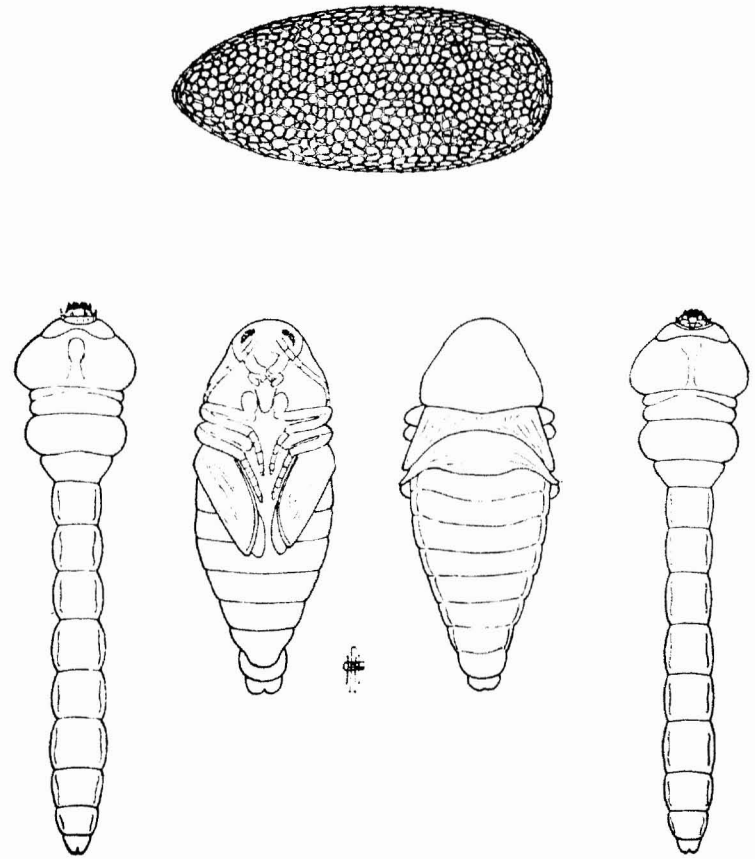


Fig. 2. Western cedar borer egg (X22), larva (X2)
and pupa (X3) (from G.R. Hopping).

The adult beetle emerging from the pupal cell in May or June spends most of its life on the foliage on which it feeds. Mating apparently takes place as soon as the sexes can locate each other and both sexes fly from one tree to another alighting on the foliage. The female usually lays its eggs on the growing limbs of the tree but occasionally on the trunk nearer the crown. Most eggs have been observed being laid on limbs from the lowest living limb upward, within three feet from the trunk, on the upper side, on the south side of the tree. The adult lays at least 15 to 20 eggs and possibly more.

The larva, hatching from the egg in approximately 12 to 18 days, extends a tunnel back and forth in the limb and later enters the trunk where it may work in any direction although usually parallel to the growth rings for the majority of the tunnel. When the larva is almost mature it tunnels nearly to the surface of the trunk or up to a foot into the large limbs. Here it cuts a pupal cell and transforms to the pupal or resting stage.

The pupa is dormant in the pupal cell for about 20 days before transforming to the adult, but the adult remains in the pupal cell over winter until May or June of the next year. (Fig. 3).

DESCRIPTION OF DAMAGE

The principal damage caused by this insect is the larval mine or gallery in the wood. The small larva excavates its tunnel in the sapwood but later enters the heartwood and completes the major portion of its gallery there. It works either up or down the trunk and occasionally around it but follows the annual rings. Although the galleries always start in the crown of living trees they may end up in the crown or near the base of the tree. These galleries may be up to 20 feet long becoming progressively wider as the larva matures. The gallery of a nearly full-grown larva is about an inch wide, narrowly elliptical in cross-section and closely packed with frass. (Figs. 4, 5,).

Damage is always started in living trees because the eggs are oviposited in the living tree crowns. There is no known evidence at present of oviposition on logs or poles after felling although the larvae already in the material may continue their galleries and damage. The damage after felling is considered to be relatively small and evidence indicates that the majority of larvae die when poles become thoroughly seasoned.

It has been shown that most of the cedar poles are not materially weakened as a result of infestation by the cedar borer.

LIFE CYCLE OF THE WESTERN CEDAR BORER

(*Trachykele blondeli* Mars.)

(From studies by G.R. Hopping at Pender Harbor B.C. 1926-1930)

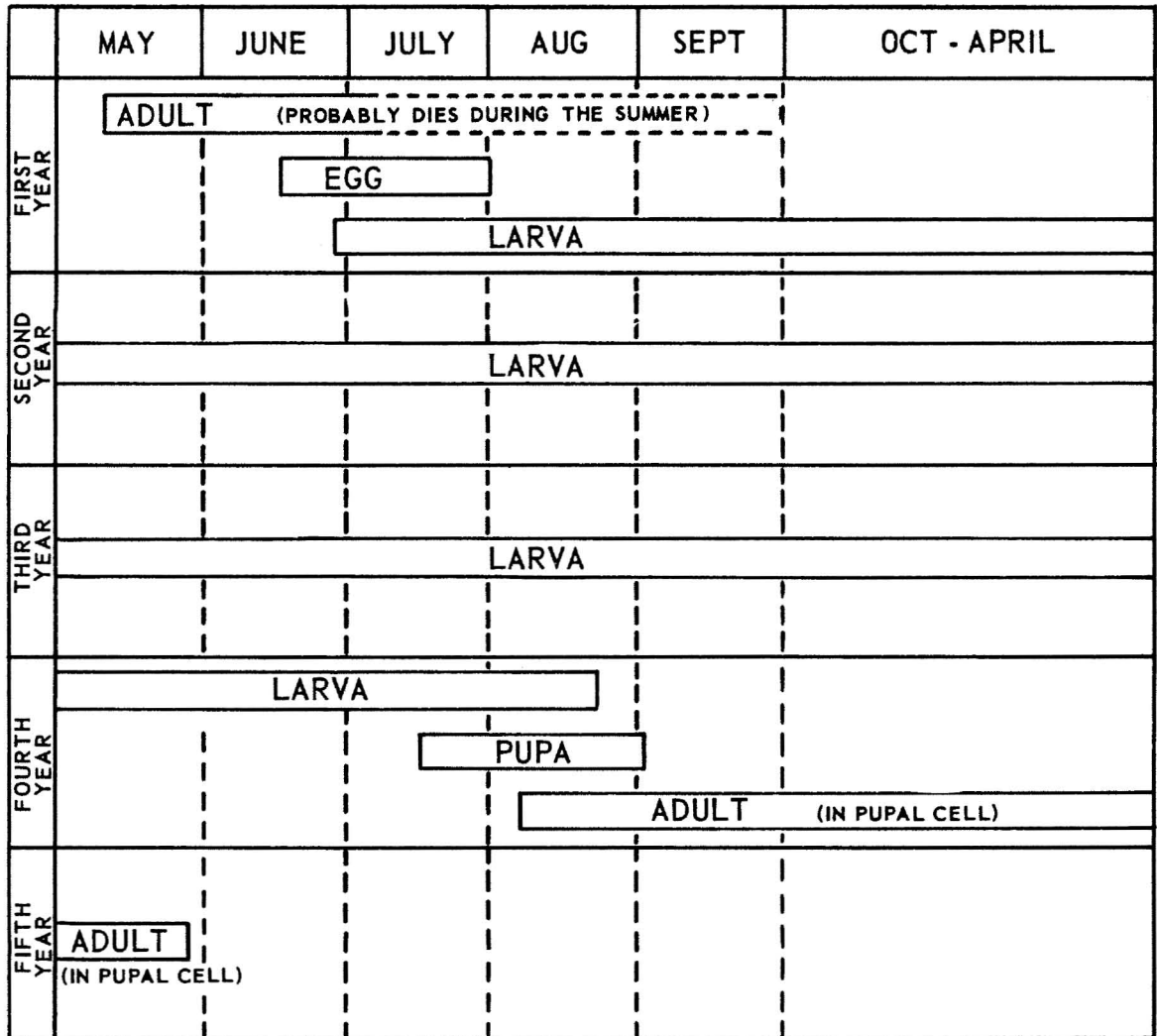


Fig. 3. Life cycle of the western cedar borer.

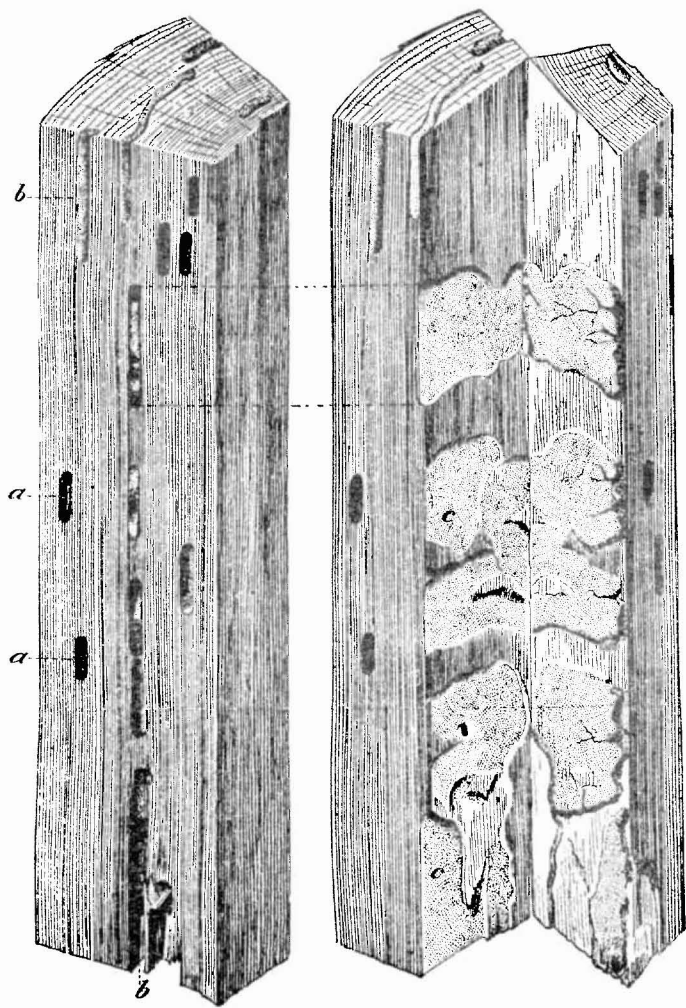


Fig. 4. Larval mines in wood of trunk of western red cedar made by larvae of the western cedar borer: a, cross section of larval mine; b, longitudinal section; c, tangential section. (from H.E. Burke).

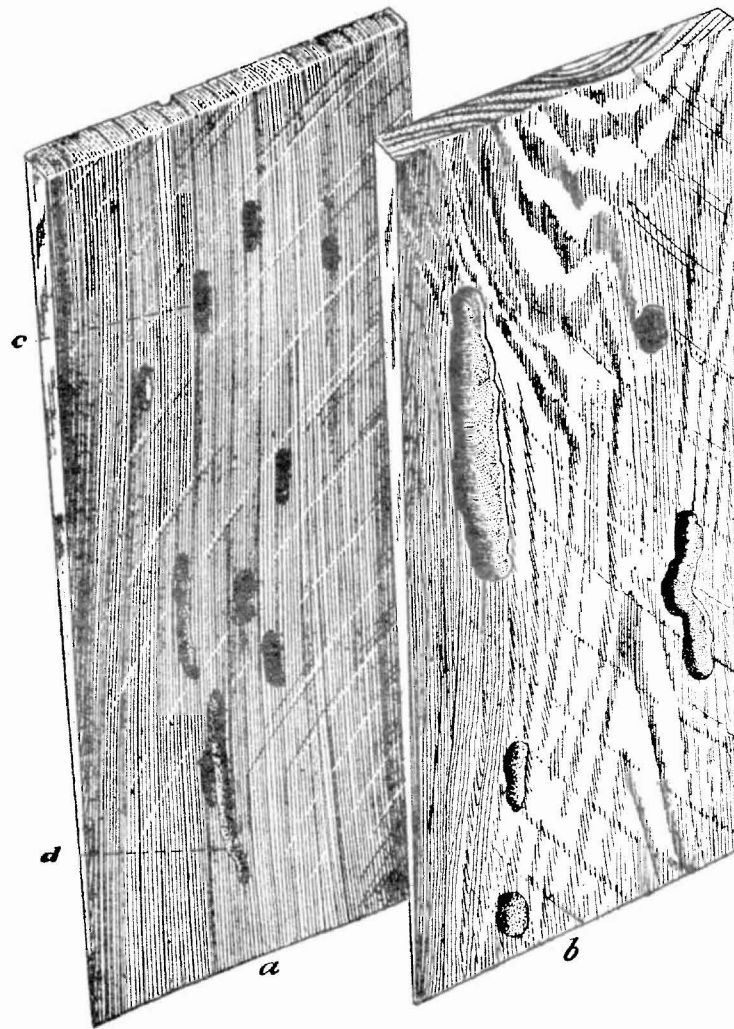


Fig. 5. Western red cedar shingles badly damaged by larval mines of the western cedar borer: a, quarter-sawn shingle showing both cross and longitudinal sections (c, d) of the larval mines; b, flat-sawn shingle showing the same. (from H.E. Burke)

DISTRIBUTION

The cedar borer is believed to occur over most of the British Columbia coastal area at least as far north as the Nimpkish area, on the Gulf Islands and as far as Harrison Lake in the Fraser River Valley. It occurs from tide level to elevations of 800 to 900 feet in British Columbia although it has been reported in Oregon at elevations up to 2,000 feet (3). This insect is also reported to occur in California and possibly in other parts of the United States. (Fig. 6).

There seems to be great variation in the intensity of infestations in different areas. Swampy sites where trees are heavily shaded seldom have severe attacks. The beetle favours open southern exposures and trees which have their crowns in the sunlight for the major part of the day.

CONTROL

There is no certain way to determine from the external appearance of a standing tree whether it contains borer work or not except in some cases where exit holes can be found near the base of the trunk. Chopping into a tree at the base is not reliable for detecting damage because very frequently only the upper parts of the tree are affected. Thus there are no known practical methods for detection or control before logging under present forest conditions.

It is possible to reduce the population of beetles in an area being logged by burning all tops and large branches in cedar operations to destroy the beetles before they emerge. It is considered that the beetle population, emerging from tops left after logging, are forced to attack other trees on the margins of the logged area and thus spread the damage to trees which might previously be free from attack.

Infested logs or poles can be submerged in water for long periods without killing the borer larvae inside and submergence is not considered a satisfactory method of control. Evidence indicates however that the majority of larvae die when poles become thoroughly seasoned.

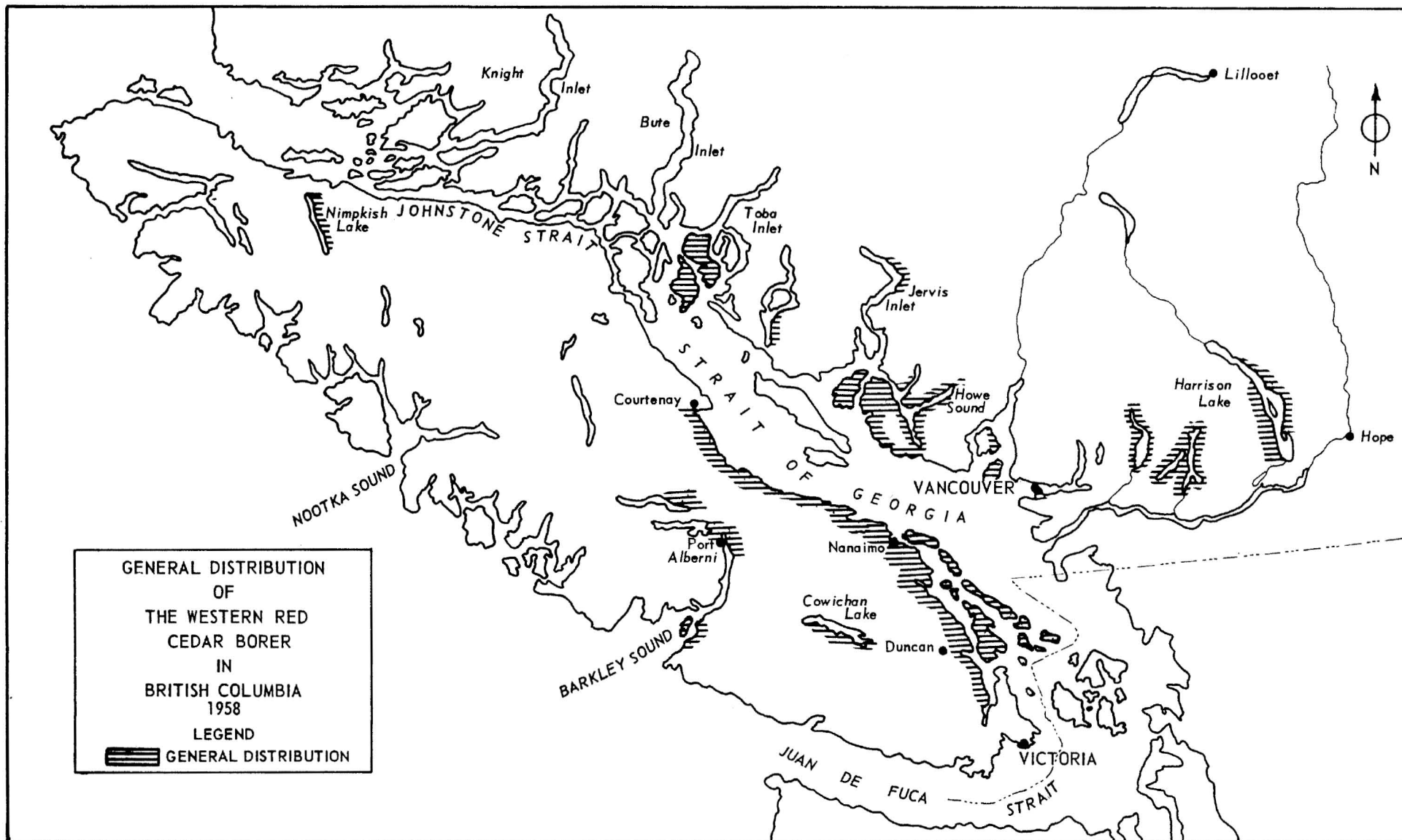


Fig. 6. Map showing the general known distribution of western cedar borer damage.

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