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## **Carbon sink in Trust Area forests**

Forests on BC's Gulf and Howe Sound Islands—part of the Islands Trust area—come under the spotlight in a new report by researchers from the University of British Columbia's Department of Forest and Conservation Sciences. The study analyzes maps of forest biodiversity and carbon storage and concludes that protecting forests in the Islands Trust area is integral to preserving the Coastal Douglas-fir (CDF) zone.

'We've always known the Islands Trust area was special because it is in the Coastal Douglas-fir Biogeoclimatic zone,' said Kate Emmings of the Islands Trust Fund. 'What we were excited to find was that relative to other areas within the CDF zone, the Islands Trust area is biologically significant.'

The Islands Trust area makes up 25% of the CDF zone. It is characterized by forests of Douglas fir, arbutus, western red cedar and salal. The unique set of ecosystems that make up the CDF zone occur on south-east Vancouver Island, the Gulf Islands, the Fraser Valley and the Sunshine Coast. Due to its small range, the CDF zone contains some of the most rare and endangered ecosystems in BC.

The study found that the forests of the Islands Trust area store and sequester more carbon than CDF forests outside the Trust area. On average, forests in the Islands Trust area store 82% more carbon per hectare and have the potential to absorb 43% more carbon per hectare over the next 20 years than forests in the rest of the CDF zone. These results are likely due to a higher forest density in Islands Trust area, and more forests in a mature or maturing state, which tend to store and take in more carbon to support their rapid growth rate.

'What we've found is that if forests in the Gulf Islands were maintained, or otherwise protected, the Islands Trust area has the capacity to be a major sink for carbon produced in the region,' said Richard Shuster, PhD candidate at UBC and author of the report, 'At the current growth rate, there is a potential that old growth forests could be restored on the islands within a century.'

The researchers also found species diversity, specifically bird species, to be higher in the Islands Trust area than in other areas of the CDF zone. Birds are the most widely used indicators of vertebrate diversity in particular habitats because they are easily mapped and represent a wide range of tolerances to human development.

The Islands Trust Area was found to support 39% more bird species than non-Islands Trust areas within the study area.

Coupled with a comparison of property values, the data showed investments in habitat protection in the Islands Trust area would be more cost effective and would achieve more biodiversity protection than investments in other areas of the CDF zone.

'In 2008, the Province determined the ecosystems of the CDF were critically imperiled and of greatest provincial conservation concern,' said Emmings. 'The reason this new study is significant is because it now provides scientific data showing that resources dedicated to preventing further loss of CDF ecosystems in the Islands Trust Area would be a superb investment in biodiversity protection and carbon storage. Most of these carbon sequestering forests are the result of good private land stewardship. The challenge is to ensure that these forests are maintained in a landscape that is over 68% privately owned.'

### **Coastal Douglas-fir Biogeoclimatic Zone**

Biogeoclimatic zones are a classification system used by the Province of British Columbia. A biogeoclimatic zone is defined as a geographical area having similar macroclimate and vegetation.

The Coastal Douglas-fir (CDF) zone is one of fourteen biogeoclimatic zones within BC. The CDF zone covers a small area of BC's south coast, including a band of lower elevation along southeastern Vancouver Island, the Gulf Islands, and a fringe of mainland along the Georgia Strait.

The CDF zone has the highest density of species of global and provincial concern of all the zones in the province. The Islands Trust Area holds a disproportionate amount of the CDF's high carbon and high biodiversity landscapes.

To maximize carbon storage and biodiversity in the CDF, investments in conservation would be most cost effective if spent in the Islands Trust area.

### **Assessment of Carbon**

Forests, woodlands and savannah ecosystems in the CDF remove and store carbon from the atmosphere.

Carbon storage and predicted carbon sequestration was measured using the methodology outlined in *Evaluation of Carbon Storage within Forests in the Coastal Douglas-fir Zone*

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by Brad Seely. To create the carbon modelling, the following factors were considered and input into a stand-level forest ecosystem simulator approved by the BC Ministry of Forests for carbon budget assessments: forest standage, forest cover, primary vegetation species, and estimation of forest growth.

Using the carbon modelling, researchers projected an estimated rate of carbon sequestration in CDF ecosystems over the next 20 years in order to understand the role these ecosystems play in climate change mitigation. The study limited the projected timeline to 20 years as the frequency of forest fires beyond that timeline was more difficult to predict.

Using data and predictive model results, this report found that the ecosystems in the Islands Trust area hold 47% of the total carbon stored in the CDF zone.

The contribution of the Islands Trust area to future carbon sequestration potential was also found to be high, with 41% of

the total carbon sequestration potential of the study area held in the Islands Trust area.

### **Value of Carbon**

The study used assessed land values to determine the most cost effective strategy to protecting bird diversity, standing carbon and carbon sequestration potential in the study area.

Because biodiversity, carbon storage and sequestration potential were higher, and land values were marginally lower in the Islands Trust area, the study found that conservation in the Islands Trust area would contribute more to the protection of biodiversity and ecosystem carbon than non-Islands Trust areas in the study area.

*To learn more about the Islands Trust Fund's initiatives to preserve habitat on the Gulf Islands and in Howe Sound, visit [www.islandstrustfund.bc.ca](http://www.islandstrustfund.bc.ca).* 